IGHT, FEBRUARY 13, 1936.

FIRST AERO WEEKLY IN THE WORLD

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# FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

No. 1416
Vol. XXIX

OFFICIAL ORGAN OF THE ROYAL AERO CLUB

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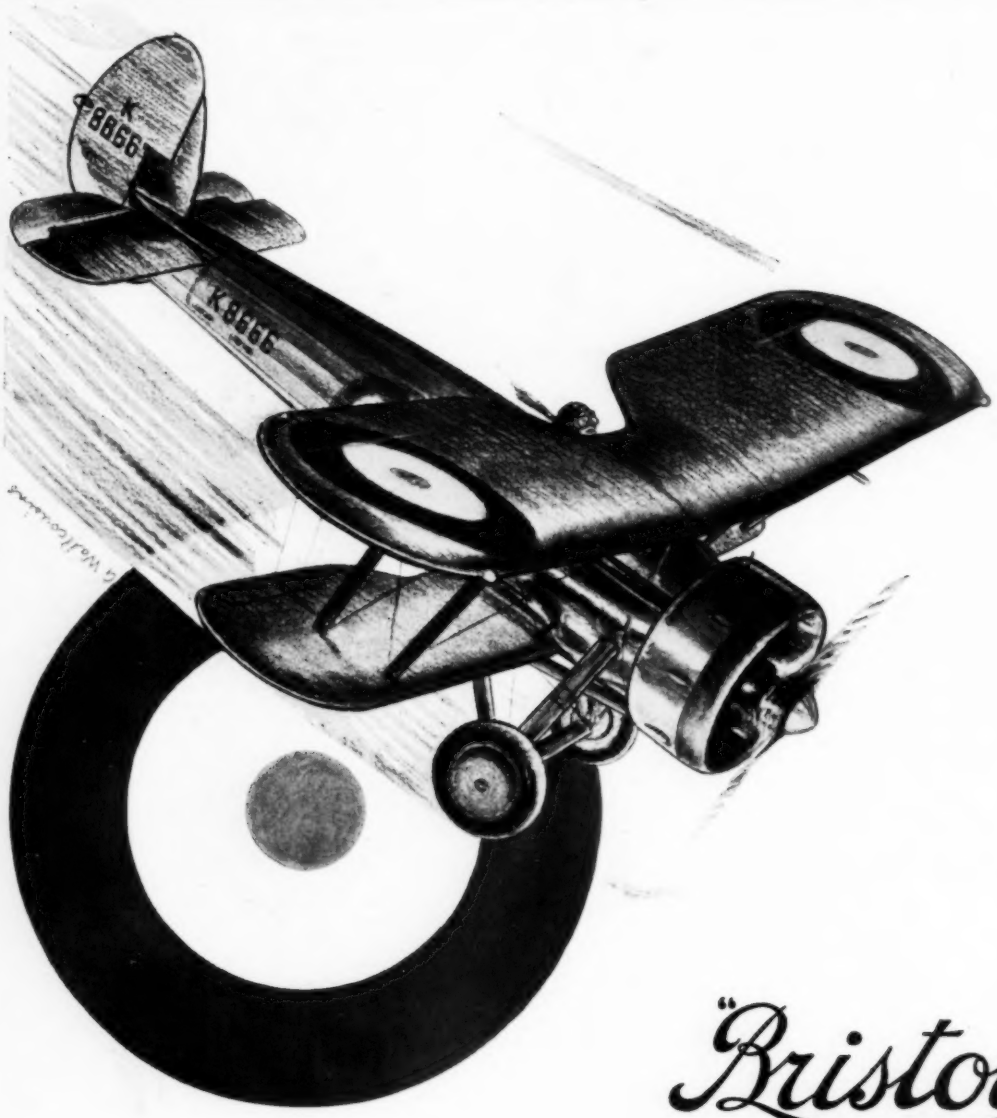


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# FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

FIRST AERONAUTICAL WEEKLY IN THE WORLD : FOUNDED 1909

*Editor* C. M. POULSEN

*Managing Editor* G. GEOFFREY SMITH

*Chief Photographer* JOHN YOXALL

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## The Royal Commission

EXPANSION of the Royal Air Force is one of the most important events which is happening in the country to-day, and in the last issue of *Flight* some account was given of the various problems which the Air Ministry has had to face, and how they are solving those problems. The speedy production of aircraft and engines of the highest quality and of designs superior to anything seen before is part of that problem. At the same time, however, another event is taking place which may have the most momentous repercussions on the future safety of this country. A Royal Commission is sitting to consider whether, in brief, the manufacture of arms should continue to be carried on by private firms or whether all armaments of war should be produced in Royal Arsenals. Aeroplanes for the Royal Air Force naturally are one of the cases which the Royal Commission has to consider, and the Society of British Aircraft Constructors has been giving evidence before it. The greater part of the Memorandum which the S.B.A.C. read before the Commission is reproduced on pages 175-177 of this issue.

The question is certainly most momentous. If the report of the Commission, whatever form it may take, is accepted by the Government, the result is likely to have a most important influence on the ability of this country to hold its own if it ever should become involved in another war. The views of this paper on the best policy for ensuring an ample supply of machines for the Royal Air Force in time of war are well known, and there would be no need to repeat them at this moment, even if it were expedient to do so. It is, however, more fitting to await the findings of the Royal Commission before reaffirming those views. The S.B.A.C., in its Memorandum, finds it impossible to believe that the opinions of a trade journal on what is a political question can influence public opinion from the Secretary of State downwards, and we shall not join issue with the S.B.A.C. on that point. None the less, whatever the influence of *Flight* may be, it shall not be brought to bear on public opinion until the Royal Commission has concluded its deliberations. In our record of editorial opinions on the subject of national safety there is nothing of which we need to feel ashamed or do feel ashamed.

The S.B.A.C. in the aforesaid Memorandum not only denied that the Society had tried in any way to influence the editorial opinions of trade journals on political points, but even went so far as to say that the Society did not approve of such papers giving expression to political opinions. The Press of Britain is free, and the opinions which have been expressed in these columns have been genuine convictions, expressed not so much in the capacity of a trade journal as in that of patriotic British citizens. *Flight* is primarily concerned with the scientific aspects of aeronautics, but it is a privilege of all newspapers to express opinions on national safety.

Those who think that war can be abolished in the world by universal disarmament have sometimes tried to accuse us of a militaristic spirit because we believed that the suggestions made to the Disarmament Conference in the direction of abolishing air armaments were too idealistic. Mr. Baldwin himself said that disarmament by itself would never stop war, and with that opinion we are in strong agreement.

### *The Measure of Strength*

During the days of financial stringency we accepted with reluctance the Government's decision to keep the Air Defence Force small, and appreciated, though we did not share, the hope that Britain's example would lead other Powers to disarm. War is the last thing which any sensible person desires, and nowadays really the only difference between men of good will is in the variety of opinions as to the best way of preserving peace. *Flight* believes that the peace of the world is insecure unless Britain is sufficiently well armed to be able to make her pacific intentions carry weight in the world. In the air in particular we believe that Britain must be strong, and the necessary measure of strength has been defined many times by Prime Ministers as not less than that of the strongest Power within striking distance.

A strong Royal Air Force is, we are firmly convinced, an influence for peace.

In this connection there can be nothing improper in quoting the words of our new King, spoken to the Cranwell cadets when he opened the new buildings of the College in October, 1934. The Prince of Wales, as he then was, said to the cadets:—

> "You have joined a great Service, and, though the Air Force is a junior Service, it, along with the Navy and Army, makes for confidence not only throughout the Empire but throughout the world—a confidence which is of vital importance and will continue to be of vital importance until the make-up of the world changes very radically."

For such reasons *Flight* has advocated, whenever it was expedient to do so, that the Royal Air Force should be strong—strong enough to meet any possible emergency, and at all times to give weight to the opinions of the British Government. The wise old Romans said *Si vis pacem, para bellum*, and it is chiefly because we, like all sensible persons, wish for peace that we want to see the Air Force strong. It is not only numbers which we wish to see; we want also to see the Force equipped with the very best of everything in the way of aircraft, engines and equipment, and we want to see adequate preparations made in time of peace for the vastly increased production which would be necessary if we ever had to go to war.

Everybody must hope that the Royal Commission will be able to show the Government how best these vital preparations can be made.

# *Congratulations!*

LONG-DISTANCE records are now very like ninepins. They are set up to be knocked down. The latest to go is that of Mrs. Amy Mollison on the England-Capetown route. Although Mrs. Mollison took the shorter course down the west coast, while Flt. Lieut. T. Rose, D.F.C., followed the Imperial way through the East African colonies, the latter has set up a new record with a very handsome margin. What is more, the new record was established in spite of certain delays which must have been maddening to the pilot. If all had gone according to plan, the new record would have been even more impressive than it actually is; but, as Rose himself admitted, on solo flights one has to be prepared for things sometimes going wrong. Delays are what golfers call rubs on the green, and must be accepted with philosophy. Regular air transport services have to do their best to guard against such delays, and their ground organisation usually enables them to do so with success.

The most impressive feature of the frequency with which new records on long-distance flights are set up is the marvellous reliability of the modern aero engine and the modern small aeroplane. Rose's engine was a Gipsy Six, and his machine was the identical Miles Falcon in which he won the King's Cup last summer. To all concerned in this fine feat *Flight* begs to offer hearty congratulations.

**ODYSSEY, 1936: The Miles Falcon (Gipsy Six) in which, as related on page 174, Flt. Lt. T. Rose handsomely lowered the England-Cape record; this *Flight* photograph was taken during a final test on the day before the successful attempt started.**

# The Outlook

## A Running Commentary on Air Topics

### The King's Cup

THREE classes instead of two, and an eliminating contest over a 1,240 instead of a 953 miles' course; these are the main changes in the regulations for the 1936 King's Cup Race announced by the Royal Aero Club this week.

Last year competing machines were divided into two classes according to engine power. This year there will be a third class, including all twin- and multi-engined aircraft, irrespective of power. In view of the fact that the twin-engined type of civil aircraft has gained greatly in popularity, it is logical to include a class for twin-engined and multi-engined machines, but it does not appear quite so logical to lump together all machines of this class without regard for their power.

It may be that to subdivide the twin-engined types into two classes would have added complications, but it does seem a little unreasonable to class, for instance, a Short Scion with two 90 h.p. Pobjoy engines with a Bristol 142 having something like ten times the power. Not, perhaps, that the Bristol firm is very likely to enter the 142, but the comparison does indicate the absurdity of placing on a footing of equality two machines so dissimilar in their characteristics.

Last year there was some possibility that racing to a formula might be revived for the 1936 race, but it has ever been a difficulty to evolve a formula which does not introduce unfairness in one form or another. It is a little incomprehensible that the Royal Aero Club should, for the sake of avoiding what could after all have been a very minor complication only, have thought fit to introduce in a non-formula race a basis which causes more unfairness than any formula would be likely to establish.

It may, of course, be argued that the unfairness applies to the chances of getting into the final, and not to the race itself, which is to be a handicap race on estimated performance. Nevertheless, it will discourage the entry of the lower-powered twin-engined aeroplanes, a tendency which can scarcely be said to be in the best interests of civil flying.

### Two-control Flying

WHEREAS it is probably fairly generally agreed that the business of learning to fly might be considerably simplified if one of the three orthodox flying controls could be omitted, there is no unanimity concerning which of the three controls can best be abandoned; or, rather, which of the two, for the elevator is a necessity. Some months ago the subject was dealt with fairly extensively in *Flight*, but correspondents were by no means agreed. Some held that the ailerons should be suppressed, others that better control would be attained by retaining the aileron controls but doing away with the rudder.

In the case of a normal aeroplane, all three controls are necessary at some time or other. In taking off and landing the machine may develop a "swing," which needs the rudder to check it. The view in many types is such that a sideslip approach is often desirable, in addition to which machines not fitted with flaps or similar devices may not have a sufficiently wide range of gliding angles and speeds.

During an extensive series of tests with a modified version of the Weick W-1 pusher monoplane, which was designed and built by Mr. F. E. Weick, of the American National Advisory Committee for Aeronautics as a private venture, the opportunity was taken to try out aileron versus rudder control. Mr. Weick and Mr. R. C. Platt both flew the machine with first one and then the other control locked, and they agree that the best all-round results are obtained by retaining the aileron control and locking the rudder.

It was found that landings from straight approaches could be made accurately, and also landings in a cross-wind. (The particular machine has an exceptional three-wheel undercarriage.) When, however, landings from S turns, or off a 180 deg. turn were attempted, the machine was found to skid outwards when entering a turn and slip downwards when it started to straighten out from the turn.

When the rudder was locked and the ailerons used, the turns were much more nearly correct, and skidding was greatly reduced, although the machine slipped downwards slightly in a steady turn. These results are interesting, but the lessons to be learnt from them are somewhat obscured by the fact that the Weick is a very unorthodox machine with special undercarriage and a very unusual form of aileron control.

### Carrying On

FOR some good reason which may be known to the meteorological experts, this winter has been and is being decidedly difficult for transport people, and the early morning newspaper pilots naturally face some of the worst conditions. The fact that they get through, or even start, on a great deal more than ninety per cent. of the mornings suggests that, some day, when de-icers, blind landing systems, and so on, have been fully developed, even the passenger services will be running within a fraction of a hundred per cent reliability.

Meanwhile, one can hardly expect charter firms, who are not unreasonably blessed with large profits, to fit comparatively expensive equipment such as de-icers and short-wave receivers and indicators. Apart from their initial cost, such items reduce a payload which is already small enough from the profit-earning point of view. Altogether, the smaller concerns will presently be competing on somewhat uneven terms in the reliability battle. Absolute reliability, in fact, is likely to become an expensive, if essential, asset in the near future.

### A Zeppelin Memory

IN last week's Gazette appears the appointment of Sqn. Ldr. S. D. Culley to No. 23 Group, Grantham, for air staff duties. This officer, who started his career in the R.N.A.S., and was stationed at Great Yarmouth, was the hero of a unique exploit in the Great War. The naval force at Harwich was constantly hampered by the movements of Zeppelins, which kept above the ceiling of our flying boats and out of the range of shore-based fighter aeroplanes. It was decided to tow a Camel out on a lighter until a Zeppelin was sighted, and then to send it up. Lieut. Culley was the pilot chosen, and on August 19, 1918, the Harwich light cruiser force set off for Heligoland Bight, with a destroyer towing the lighter with the Camel. At 8.30 a.m. the Zeppelin L.53 was sighted by Yarmouth flying boats under Major (now Group Capt.) R. Leckie. She was flying at 15,000 feet. Leckie reported to Admiral Tyrwhitt by visual signal, and was told not to interfere.

Culley took off his Camel, after a run of only five feet on the lighter, at 8.45 a.m., and climbed for an hour on the sun side of the Zeppelin. At about 18,000 feet the Camel had reached its ceiling, and was still some 200 feet

below the L.53. Culley then stalled his Camel to get elevation, and opened fire with both guns. One soon jammed, but the other set the airship on fire. It was burnt up before it reached the water. One of the crew jumped out at a height of nearly three and a half miles—we must presume by parachute (though Culley did not see one)—and was picked up almost unharmed by a Dutch ship.

Culley found the Harwich force, and landed in the sea in front of his destroyer with one pint of petrol in his tank. His feat was rewarded by the grant of the Distinguished Service Order. His Camel was salvaged, and is now on view in the new War Museum in the Geraldine Mary Harmsworth Park, Lambeth.

## *Multiplication . . .*

*DURING* the past few years *Flight* has occasionally stressed the economic absurdity of competition over single air routes when air transport is, in any case, only just reaching a self-supporting stage. At present three companies are flying to the Isle of Man from the mainland, and two are flying between London, Belfast and Glasgow, while in the summer months there are several more examples of possibly wasteful competition.

Such service multiplication is a purely domestic matter and does not really concern us, but when these tactics extend to the Continent it is surely time to call a halt and to examine the situation. There are three British operators—one in collaboration with a foreign company—flying between London and Antwerp, and three flying between London and Brussels.

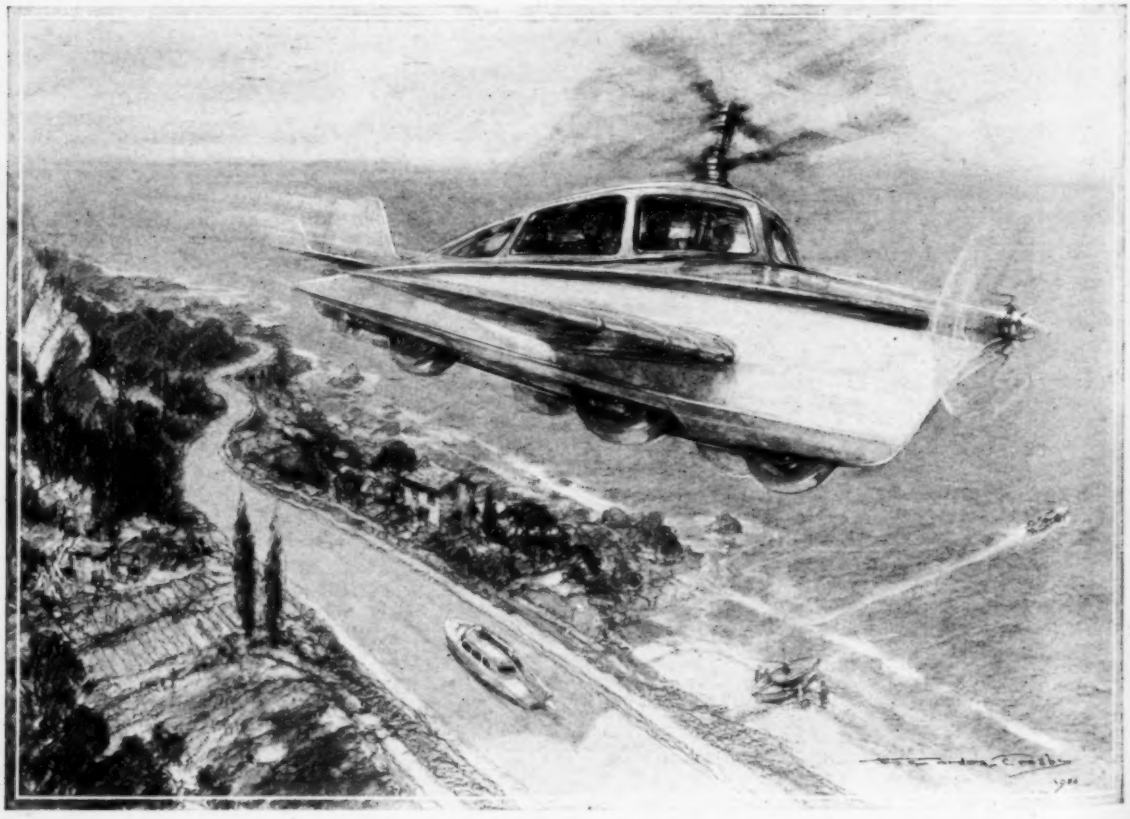
Now we have two British companies flying over an identical Scandinavian route, which is, furthermore, already serviced by a foreign combination of companies. A third British concern is expected to launch yet another service over part of this route in the not distant future.

## *. . . and Division*

*NO* doubt the two British companies have counted the cost and gauged the possible traffic, which may be disproportionately greater than we are entitled to imagine. No doubt, on one side or both, unsuccessful attempts have been made to come to an amicable understanding.

Neither, even when working alone, can hope to make ends meet over a new route within a year—in fact, one of the companies openly states that a lot of money will need be spent before a really useful return can be expected. The effect of a duplication will simply mean that this period of gestation will be proportionately extended. For one, or even both, the money may be well spent, and competition, we are told, is the secret of prosperity. It is now much too late for one company to claim that it was "the first to think of running a Scandinavian service," or for the other to claim that it was the first to start—as proof of a right to fly exclusively over the route.

In the meantime the spoils are divided. The position is pleasing to the travelling public, pleasing to the aircraft manufacturers and pleasing—if a trifle idiotic—to the looker-on, who feels that air transport must be progressing favourably for such a contretemps to be possible.



**NOT SUCH A FAR FLIGHT OF FANCY?** A vehicle on the lines of this twin-rotor gyroplane, able to travel on land, in the air, or on the sea, is visualised by Harry Harper in an article in a recent issue of *The Farmer's Home* (supplement to *The Farmer and Stock-Breeder*). In general layout it is suggestive of the proposed Asboth helicopter described in *Flight* of May 16, 1935. The drawing is by F. Gordon Crosby.

Sharjah, Oman, on the Persian Gulf, a desert station on the Empire route. This view is from one of the fine dioramas at the recent Imperial Airways Exhibition. (*Flight* photograph.)

# LONG-DISTANCE AIR-LINE BOOKING

## *How Imperial Airways Deal with the Intricate Problem of Allocating Seats for Through and Intermediate Journeys on the Empire Routes*

By ROBERT BRENARD, of Imperial Airways

ONE of the most interesting departments at the executive offices of Imperial Airways at Airway Terminus, Victoria, London, is that in which an enquiry officer and an expert staff deal with passenger bookings for the services not only from London to the Continent but also to Egypt, India, Africa, Malaya, and Australia.

It is a special system of seat allocation, adapted to the individual requirements of long-distance air transport, which has been evolved. Ocean liners operating on the long sea routes put in, as a rule, at only two or three intermediate ports on a voyage of thousands of miles. But with the Empire air routes, not only do the machines call at ports such as Brindisi, Alexandria, and Cairo, but on a flight, say, across Africa from north to south, or along the India route to Australia, they are scheduled to alight at a number of points which lie far inland, as well as on the coast; and the traffic between these chains of intermediate points has to be taken into consideration as well as the long-distance traffic between terminal stations.

In passenger transport by air, as in the case of sea travel, it is the long-distance bookings which take preference over those which are for only comparatively short distances; and from the viewpoint of the travelling public this is as it should be, remembering that the greatest amount of individual benefit, as represented in time actually saved, is to be derived by those passengers who book flights for the longest distances. If, therefore, in times of traffic pressure, it comes to a question of finding room on any particular service for a passenger who wants to book all the way through to Australia, or for one who wants to fly only from London to Cairo, preference naturally goes to the voyager wishing to fly the longer distance. Even so, it is always the aim of those allocating the seating on the main services to give satisfaction, wherever they can do so, to the largest number of passengers and, at the same time, to ensure that the liners fly with maximum loads over each of the stages of the various routes.

In allocating seats between terminal points, and also between terminal and intermediate stations, and along the various intermediate stages, the experts in London are guided by periodical reports which they receive as to general traffic conditions along the entire network of Imperial routes. These reports, when they have been analysed, make it possible to apportion beforehand, according to a careful forecast of traffic requirements, the number of seats actually earmarked for passengers along

any given section of a route which a forthcoming service is to traverse.

For example, according to known traffic needs, as they exist from time to time, and as they govern, say, the England-Australia route, so many seats will be apportioned between England and Egypt, so many between England and India, so many between England and Malaya, and so many right through from England to Australia. In addition to this, certain intermediate stations will, according to the existing demands of traffic, be given a call upon a certain number of seats for passengers who may wish to board at these stations.

It should be mentioned that booking for any particular departure from London often begins months before the service is due to leave; and what it all amounts to is that it is the task of the officials in London to plot out the seating of each service beforehand so as to allocate this accommodation in a way which fits in most accurately with the actual flow of traffic as statistics of previous flights have shown this to exist.

The actual position as regards advance bookings for the various impending departures is communicated by London to the stations along the routes in the form of advice notes which go out frequently by air, and by this means officials at intermediate stations are made aware of how matters stand when they come to deal with local enquiries as to passenger reservations.

To render easy the identification of the various long-distance services, each Empire flight bears distinctive letters and numbers. Every service operating along the Africa route is, for example, prefixed by the identifying letter "A." Then after this prefix comes another letter, either an "N" or an "S," which indicates whether the flight is working northward or southward. And finally come figures which represent the actual identifying number of that particular flight. This method simplifies all cable and other references to any specific service. All that is necessary, for instance, in a cable communication regarding any particular flight southward over the Africa route is to use reference letters and numbers such as "A.S.300."

### *Planning in Advance*

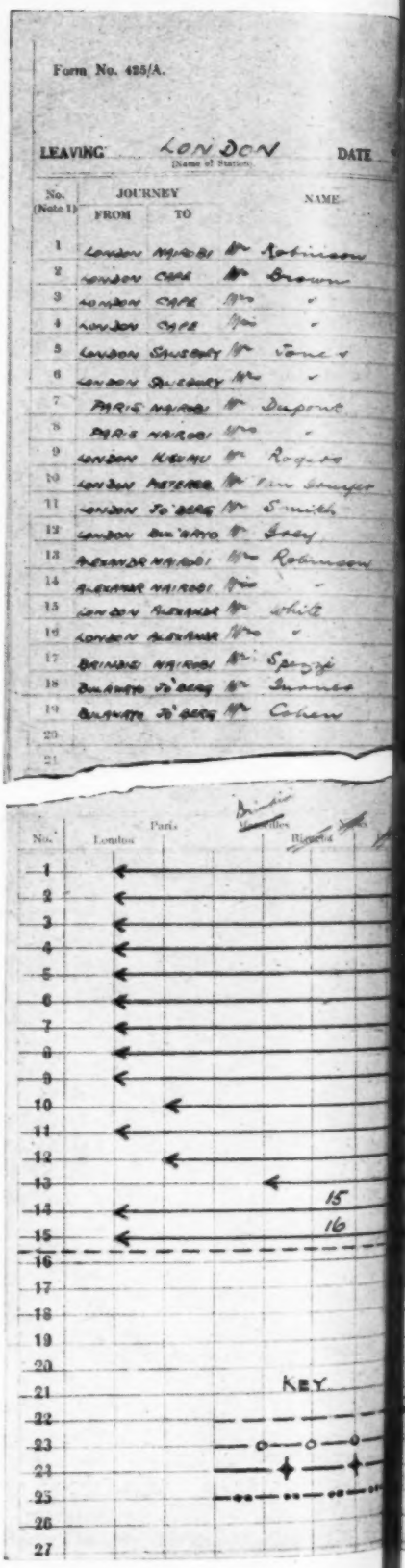
On the India route the prefix letter is "I," while flights eastward or westward in either direction along this route are identified by the letter "E" or "W," followed by the number of the specific flight.

To put matters in a nutshell, the keynote of the system is that each departing service is mapped out beforehand, with London holding allocations for a certain number of seats; while certain intermediate stations—such, for example, as Cairo, Nairobi, and Johannesburg—also have seat allocations at their disposal. These allocations are, as has been indicated, arranged in the light of known traffic demands; but they are susceptible to constant modification and adaptation to meet the actual requirements of the travelling public.

It is here, in fact, that the traffic experts have a chance to exercise their ingenuity. Cables, wireless messages, and 'phone calls all play their part as the date of departure draws near, and the officials often find themselves called upon to reconcile, and if possible harmonise, a number of apparently conflicting requirements.

An intermediate station which holds a certain allocation may, for example, cable urgently for additional accommodation. Another station along the route may find that, owing to a sudden and unexpected cancellation, it can release one of the seats it has previously held. A passenger who has already booked his accommodation over a certain portion of a long-distance route may, for business or other reasons, come in and ask to be allowed to extend his flight over several additional sections. Another passenger who already holds his own personal ticket may telephone to see if he can obtain additional accommodation for some friend or business associate. And then, perhaps, almost at the last moment, some traveller who is in desperate haste may come dashing in and plead for a seat to be found for him.

A task requiring unfailing courtesy and tact, as well as an expert knowledge of every aspect of the services, is that of the enquiry officer who deals with such emergencies. But nowadays, simplifying some of his problems at moments of difficulty—when it seems almost impossible to meet a rush of eleventh-hour bookings—is the fact that the main Empire services between London and Singapore and between London and Johannesburg, are operating twice weekly instead of on the once-weekly basis which was previously the case. Yet, even allowing for this easing of the strain of an ever-growing traffic demand, the work of the passenger-booking department is one which not only requires the greatest discrimination, but also an unfailing eye for the varying factors that may be introduced by weather and other conditions along the thousands of miles of Empire routes. During the periods of monsoon winds, for example, aircraft




**This is a typical booking sheet of an Empire Service. The columns in the top half are self-explanatory. The bottom half of the sheet shows in chart form what has been booked and shows at a glance what accommodation is vacant. Cairo, Nairobi and Johannesburg also hold allotments, as shown by the panels at the bottom of the sheet, the lines running through them showing the numbers of seats booked. The panels have been shown in dotted lines for reproduction purposes; actually they are in vari-coloured pencil.**

## IMPERIAL AIRWAYS (and Associated Companies)

## EMPIRE SERVICES BOOKING SHEET.

**AFRICAN.**

CONTROL No.

FLIGHT No. HS 500

★ LATEST DATE FOR PROVISIONAL BOOKINGS 9/10 (15th day before departure).

| TKT SERIES AND NUMBER | DATE BOOKED (Note 2) | DATE CONFIRMED (Note 3) | AGENT. (Note 4). | REMARKS. (Special Instructions, &c.) | DEBIT SLIP No. (Note 5) | CANCELLATIONS. DATE | AMOUNT REFUNDED | DATE REFUNDED | CREDIT SLIP No. (Note 6) | BOOKED BY (Initials) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 23/3 | | London | | | | | | | |
| | 10/5 | | New York | | | | | | | |
| | 1/6 | | London | | | | | | | |
| | 4/6 | | Paris | | | | | | | |
| | 21/7 | | London | | | | | | | |
| | 8/8 | | London | | | | | | | |
| | 22/9 | | London | | | | | | | |
| | 27/8 | | London | | | | | | | |
| | 2/9 | | London | | | | | | | |
| | | | London | | | | | | | |
| | 24/9 | | London | | | | | | | |
| | 3/10 | | Brindisi | | | | | | | |
| | 23/10 | | Bulawayo | | | | | | | |

## ALLOTMENTS.

Cairo (Heliopolis) Asmara Khartoum Malakal Entebbe (Kampala) Nairobi Dodoma Mpika Salisbury Pietersburg Kimberley Capetown
Alexandria Assiut Wadi Halfa Kosti Juba Kisumu Muchi Mbeya Broken Hill Bulawayo Johannesburg Vereeniging West

2
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19

Outgoing (from recommend.)
Cairo
Nairobi
Johannesburg

may need more fuel than usual to accomplish certain stages with a sufficient margin; and this means that their loads of mails, passengers, and freight must be adjusted to allow for this extra fuel. Then there is often the question of the state of various intermediate aerodromes to be reckoned with. During spells of heavy rain it may be necessary to lighten loads so as to facilitate the take-off of the big machines. And so on. All such factors as these, and many others, have to be borne in mind by those at London headquarters.

A special department in the booking office at Victoria deals with Continental traffic. This, as may be imagined, is simpler to cope with in many respects than is long-distance Empire traffic; but at rush times, when services to the Continent may have to be duplicated or triplicated at short notice, there are quite enough problems with which to grapple. There is also an increasing volume of passenger traffic nowadays which, after flying, say, from London to Paris by Imperial Airways, or from London to Berlin by Lufthansa—for whom Imperial Airways act as general agents—continues on to distant parts of Europe by connecting services; and all such connections have, of course, to be arranged beforehand, and the necessary allocations obtained. And what one needs to bear in mind, as a final point, is that all such operations as one has described have to be carried out as rapidly as possible. It is time-saving that is the keynote of air transport—and this means time-saving not only in the air, but also on the part of the booking office and of every other department of the ground organisation.

# THE KING'S CUP RACE

## *To be Flown on July 10 and 11 : Multi-engine Class : Longer Eliminating Course*

IT is announced by the Royal Aero Club that this year's King's Cup Race (for the Cup instituted by His Late Majesty King George V) is to take place on July 10 and 11. The race will again be flown in the form of an eliminating contest and final, the former taking place on the Friday, July 10, and the latter on the Saturday, July 11.

The course of the eliminating contest will be approximately 1,240 miles—i.e., 287 miles longer than the corresponding course last year. Again this year the aircraft in the eliminating contest will be divided into classes of under and over 150 b.h.p. maximum output, but there is, in addition, to be a new class for multi-engined machines, in which there will be no horse-power restrictions.

Fifty per cent. of the starters in each class (with a maximum of ten in each class) completing the eliminating course in the best time will pass into the final.

In the final, the machines which have qualified will race on estimated performance handicaps over a course of approximately fifty miles—the same length as that of last year—starting and finishing at Hatfield Aerodrome.

Full details will shortly be issued by the R.Ae.C.

# ROYAL AERO CLUB OFFICIAL NOTICES

*WEEK-END Aerien, July 23-26, 1936.*—The Royal Aero Club's letter to British private owners on this subject dated December 2, 1935 [see p. 601, *Flight*, December 5], has resulted in approximately 220 names of foreign private owners, representing twenty-two countries, being submitted for invitations to attend.

As already stated it is the intention of the committee that the foreign guests should be under no expense whatever, other than that of oil and fuel, during the period of the official programme, and that the cost of this hospitality should be met by a fund to be raised among British private owners, the Royal Aero Club, and others interested.

Those who have enjoyed and perhaps hope to enjoy the lavish entertainment always given to British air tourists abroad will realise that we in this country should undertake our full share in showing our appreciation of this hospitality.

It is the desire of the committee that the cost of entertaining our foreign guests, estimated to be in the neighbourhood of £2,500, should be widely distributed, so as to give every British private owner the opportunity of contributing even a small amount, and thus show the individual appreciation of all the members of the British aviation community.

The committee is diffident in suggesting the amount of any individual donation, but is confident that it may be left to the British private owners to give as generously as they can.

The sums subscribed will be used only for the entertainment of foreign guests and to meet the necessary expenses incurred in the organisation of the Week-End Aerien. It is hoped that British private owners will wish to participate in the various items of the programme, for which they will be charged the *pro rata* expense, which will be kept down to the minimum.

Proposed plans include visits to Oxford and Cambridge, the Isle of Wight, and an official banquet in London, on Saturday, July 25.

In the meantime, the committee is naturally anxious to know the amount of financial support likely to be forthcoming, and invites donations at the earliest possible moment. Forms are obtainable from the secretary.

The committee would add that any sums not so expended will be refunded *pro rata* to the donors.

*Air Touring Abroad.*—Members are reminded of the arrangement whereby British private air tourists who are members of the Royal Aero Club are exempt from landing and take-off fees, and are given free garage for their aircraft for a period of forty-eight hours when visiting certain countries abroad.

Since these facilities were first made available in April of last year the Club is pleased to state that it has been able to conclude negotiations with several additional countries. The facilities set out above are now available in the following countries: Austria, Belgium, France, Germany, Greece, Hungary Italy, Japan, Lithuania, Poland, Roumania, Yugoslavia.

In order to obtain these facilities members must produce the F.A.I. Identity Card on arrival. The F.A.I. Identity Card for 1936 will be issued free to all members making application on a form which is obtainable from the Club. Applications must be accompanied by a photograph (passport size). The card is available only during the year of issue, is not transferable, and is strictly confined to air touring in a private capacity.

HAROLD E. PERRIN, Secretary.

## *Numbers of Civil Aircraft*

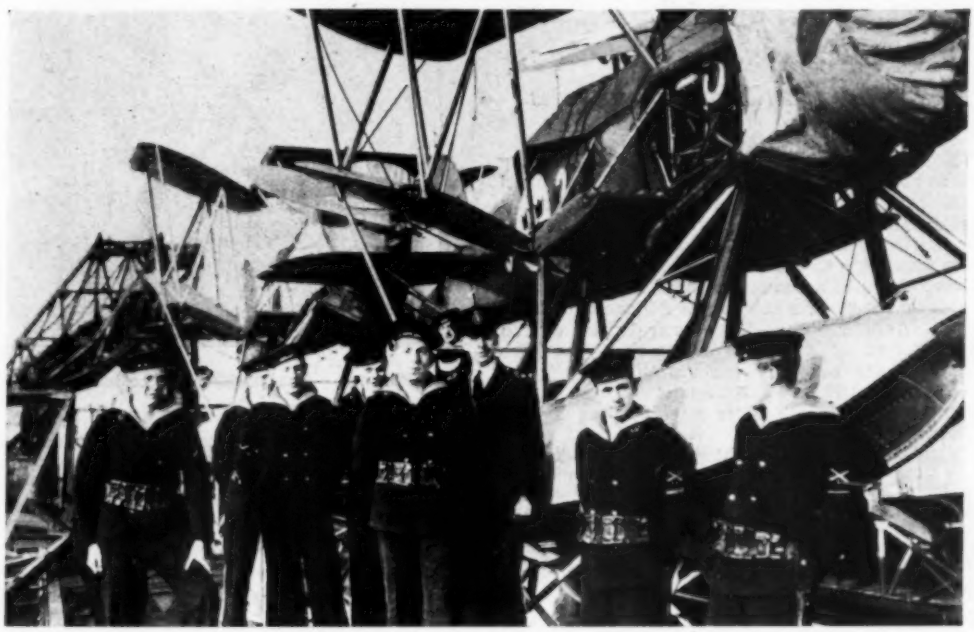
AT the close of last year there were in Great Britain and Northern Ireland a total of 1,577 registered civil aircraft, of which 168 belonged to regular air transport companies. These figures were exceeded in three other countries, Germany having a total of 1,809 (244 being transport machines), France 2,201 (221 transport), and the United States 7,202 (518 transport).

It is natural enough that the special geographical and other conditions of the United States should put that country a long way ahead of others in possession of civil aircraft, but it is not a little surprising that the German total should exceed that of the United Kingdom by so little as 232 machines.

No other country achieves a total of four figures or a number of transport aircraft running to more than three figures.

# THE FOUR WINDS

## ITEMS OF INTEREST FROM ALL QUARTERS



**Members of the crew of the Swedish aircraft carrier *Gotland*—a visit to which is described on pages 178b and 178c—pose for *Flight* beneath their Ospreys.**

CAPT. POULSEN, chief of the Danish Army baloon centre, is in England to collect an Autogiro.

The German authorities, regarding it as a military machine, have refused to allow it to fly over their territory.

It is said that a number of bombers has been ordered in the U.S.A. for the Dutch East Indies Army.

According to an official report, 1,000,000 Russian civilians passed tests last year in anti-aircraft and chemical defence.

The first of the Douglas Sleeper transports (D.S.T.s) has been on show at the National Pacific Aircraft and Boat Show in Los Angeles.

Miss Jean Batten received a dressing case from members of the New Zealand Society at the House Dinner of the Royal Empire Society last Friday.

A large aerodrome has been built on the small island of Sylt, south of the post-war boundary between Denmark and Germany. The Germans, it is believed, are to construct a large naval flying base there.

In the two years that Lufthansa have been operating the mail service to South America their machines have crossed the Atlantic 113 times.

One of their Heinkels, incidentally, averaged 215 m.p.h. between Seville and Stuttgart recently.

In return for the purchase of a fast Junkers machine by Denmark Germany is to afford greater facilities to German trippers visiting that country.

### *Tragedy in Munich*

Three people were killed and eight were injured last week when two training machines of the German Air Force collided and crashed in the streets of Munich. The occupants escaped by parachute.

### *Disarmament Among the Apidae*

A consignment of stingless bees was on board the Imperial Airways machine which left Salisbury (Rhodesia) last week. The bees are being carried in a section of the tree in which they were discovered.

### *Stamps Across the Empire*

Imperial Airways inform philatelists that they cannot undertake to return "first flight covers" flown on the new Kanos service, or on subsequent new services; collectors must make their own arrangements for the return of envelopes.

### *Twenty-five Years Ago*

(*From "Flight" of Feb.* 11, 1911.)

"Yet another step towards the time when the flying bus will be a feature of our daily life was made on the 2nd inst., when Lemartin, the chief pilot of the Bleriot School at Pau, succeeded in keeping the new four-seated Bleriot in the air about 8 mins. whilst carrying eight persons on board, the weight transported being 423·5 kilogs."

### *A Record for Fairchild*

A nine-lens single-unit aerial mapping camera built by the Fairchild Aviation Corporation is claimed to be the largest of its kind in existence. It weighs 305 lb. and takes all exposures on a single sheet of film.

### *Travelling Light*

Mr. David Llewellyn, who is flying to the Cape in an Aeronca light monoplane, had reached Rome from Pisa at 1.15 p.m. on Monday night. Weather conditions forced him to avoid a flight across the Mediterranean from Marseilles.

### *An Australian Industry?*

A Federal subsidy for the establishment of aircraft factories in Australia is likely to be proposed. In all probability a large part of the air defence equipment would be built under licence from British firms. Encouragement would also be given to British companies to establish works over there.

### *Jumpski*

"Jumping from plane-towed gliders on skis is to be one of the novel sports thrills for members of the Kosaren All Union Congress early in March. Among the 400 jumpers in one section will be fifty 18-year-old girls dropping from ANT 9 planes. Immediately the jumper lands, he or she must retrieve a pair of skis also let down by parachute, and dash off on a 12-miles ski race."—From a Press report.

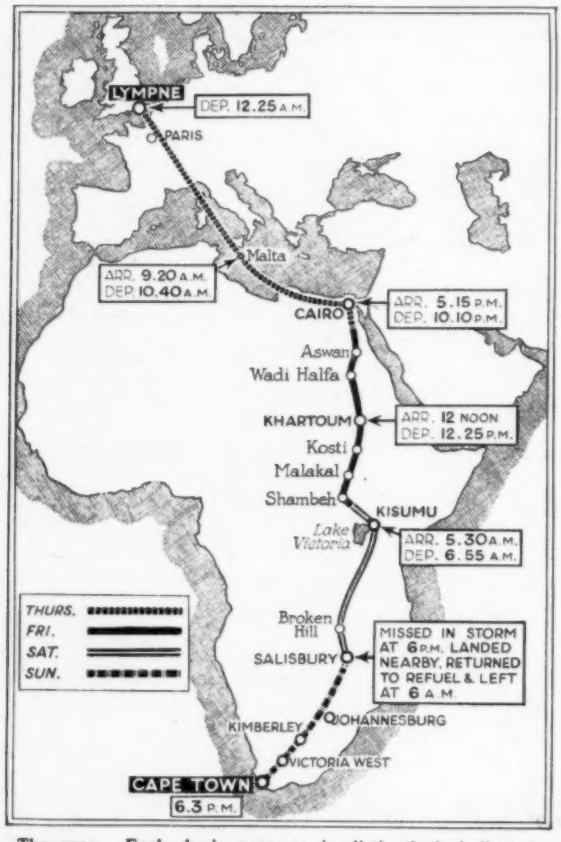
# ROSE SHOW

## *—and a Good One : Flt.-Lt. Tommy Rose, in the King's Cup Miles Falcon (Gipsy Six) Lowers the England-Cape Time to 3 days, 17 hours, 37 minutes*

FLIGHT LIEUTENANT "TOMMY" ROSE, flying down to the Cape on business, has broken the record for the trip. He left Lympne early last Thursday morning in the Miles Falcon Six, with which he won the King's Cup last year, and which, in fact, is the machine in which he was flying to the Cape early in January when he was forced down in a snowstorm near Abbeville. His course lay down the eastern side of the African continent, whereas Mrs. Amy Mollison—the former holder of the record, with a time of 4 days, 6 hr. 53 min.—took the western and shorter route. Even so, "Tommy" has managed to knock 13½ hours off that figure. His 180 m.p.h. Falcon, of course, is a much faster machine than that of Mrs. Mollison.

The stepping-off point for the flight was Lympne, which he left at 12.25 a.m. last Thursday morning. The Falcon carried 120 gallons of petrol—permitting a range of well over 1,000 miles—and some luggage. "Tommy" wore an Irvin and the well-known smile. By 9.20 a.m. he was at Malta—an hour ahead of the record time. He refuelled there, left at 10.40 a.m., and was at Cairo at 5.15 in the evening. His engine is said to have cut out through lack of fuel the minute he touched the ground. There was a little matter of a forced landing in a volcanic district on the way from Cairo (due to a petrol leak caused by unsecured luggage breaking a pipe), and by the time he had reached Khartoum a good deal of time had been lost. The time from Cairo to Khartoum was just over 14 hours.

**The man.** **The machine will be found on p. 166.**




**The map.** Each day's progress is distinctively indicated by the line.

Shortly after mid-day last Friday he took off for Kisumu (Kenya) and reached it at 5.30 a.m. on the third day of the flight.

On the next stage—to Salisbury, Southern Rhodesia—he was literally forced down by a tropical cloudburst, even though the Gipsy Six was held wide open. Luckily, an open space appeared and he managed to put the Falcon down at full throttle. For some time before this the machine had been skimming tree tops under conditions of almost no visibility. He spent the night on a nearby ranch, but was unable to get in touch with the aerodrome at Salisbury because the telephones had been upset by electrical storms. Next morning he experienced greatest difficulty in taking off—the altitude was about 5,000ft. —although the Falcon had only one-third of its full petrol capacity. On returning to Salisbury it was discovered that a wheel fairing had been split during the attempt to rise from the rough ground.

### *Almost Washed Out*

The next portion of the flight took him into tropical deluges and at one time he feared he was lost. He was able to find Mafeking, however, and there to take on twelve gallons of petrol, which enabled him to carry on to Kimberley. Thereafter the flight to Cape Town was uneventful. He touched down at three minutes past six just as darkness was falling, and was met by 3,000 enthusiastic South Africans.

In a broadcast from Cape Town last Monday night—a fine piece of work by the B.B.C.—he mentioned, as one of the highlights of the trip, the view of Paris at 2 a.m. from a clear sky. The "wave-hopping" crossing of the Mediterranean in a rainstorm at about 50ft. was obviously regarded as being "not so good." He sent a message of gratitude to his friends at Reading, and ended with the characteristic remark that, if it was still raining in Rhodesia, he would be "coming back on a bicycle."

Viscount Swinton, Secretary of State for Air, has sent Flt. Lt. Rose the following message: "Hearty congratulations on your excellent performance."

The equipment of the Falcon and its Gipsy Six engine included the following:

Claudel-Hobson carburetter, B.T.H. magnetos, K.L.G. plugs, Weyburn camshaft, Auto-Klean strainers, Fairey metal airscrew, Shell fuel, Castrol oil, Bendix brakes, Palmer tyres, Smith's instruments, Short and Mason "Sestrel" compass, Sperry blind-flying instruments, Rhodoid cabin top moulded by Plastilume Products, Rumbold upholstery, Bamberger spruce, Saro plywood, Titanine finish, and one of the new Harley landing lights.

Witnesses before the Arms Commission. From left to right: Mr. C. R. Fairey, Sir Robert McLean, Lt. Col. L. F. R. Fell and Mr. F. Handley Page.

# AIRCRAFT and the ARMS COMMISSION

## *S.B.A.C. Memorandum Read : Members of the Industry Give Evidence and Submit to Examination*

SOME extremely interesting matters were dealt with last week by the Royal Commission on the Private Manufacture of and Trading in Arms, when the manufacture of military aircraft was discussed following the reading of a lengthy memorandum submitted by the S.B.A.C. Some well-known personalities in the aircraft industry gave evidence and were examined by members of the Commission.

On this and the following pages will be found summaries and extracts from the more important parts of the S.B.A.C. statement.

The memorandum began by sketching the history of the society, which came into existence during the war. It then explained the position of the Advisory Committee for Aeronautics (now called the Aeronautical Research Committee), the Royal Aircraft Factory and the Air Battalion of the Royal Engineers before the war, following this with an account of the early constitution of the Royal Flying Corps.

The next point dealt with was the contrast between the pre-war policy of the War Office, which was to concentrate design work in the R.A. factory, and that of the Admiralty, which encouraged constructors by buying and trying out examples of various promising types of British aircraft. The official policy, said the memorandum, which did little to foster the aircraft designer, had most serious effects on the development of engines. In August, 1914, four squadrons of the R.F.C. took the field with sixty aeroplanes, almost wholly of French design or designed by the Royal Aircraft Factory, and all fitted with engines of foreign design and make.

"While the Royal Flying Corps was forced to depend on only a fitful supply of aircraft during the initial six months of the war, new designs of aircraft were being prepared by the British industry, but before the efforts being made could become effective, private enterprise in the service of the German Air Force produced the Fokker monoplane. This machine in the hands of some of Germany's most able pilots gained a material and moral ascendancy over the Royal Flying Corps in the field, and the B.E.2c, which was bearing the brunt of work of the Royal Flying Corps, suffered heavily. When the Fokker first appeared there were sixteen R.F.C. squadrons in France, of which twelve were equipped with the B.E.2c."

### *War Experiences*

"Urgent demands were made by the R.F.C. in the field for the speeding up of the production of fighting aeroplanes and for efficient fighters, and early in 1916 new types were received in France which could counter the Fokker monoplane. The R.F.C had meanwhile to pay a heavy price in the endeavour, with inadequate equipment, to carry out the work of helping the Army. Casualties mounted high, and important Army reconnaissances and bombing raids often could not be completed owing to the shooting down of British aircraft. R.F.C. Headquarters laid down a rule that a machine proceeding on reconnaissance had to be escorted by at least three other machines; all had to fly in close formation and the reconnaissance was not to be continued if any of the machines became detached. This had the effect of reducing the effective strength of the R.F.C. as although the variety of work required to be done for the Army did not diminish, many more aeroplanes had to be set aside for certain missions to the exclusion of others.

Meanwhile, the Admiralty had continued to pursue its policy of encouraging private enterprise. It was in possession of satisfactory types of aircraft (easier and cheaper to build than those of Government design) and was urging the development of engines. It was asked many times by the War Office to hand over machines to the Royal Flying Corps, and on occasion did so, as, for instance, in the latter part of 1916, when a squadron of machines—all of private design—were made available by the Admiralty. This competition between the two services, coupled with casualties in our Air Force and the effects of the early air raids on England, gave rise to public agitation urging that some co-ordination should be introduced."

### *Private Manufacture*

The early air committee and the Air Board were then dealt with, until in 1917 the responsibility of placing the actual orders for aircraft and engines was transferred from the Admiralty and War Office to the Ministry of Munitions. This release of the industry from competition between the two services and from narrow restrictions contributed to the successful outcome of the war.

After dealing with some evidence, the memorandum states:—

"It is inevitable that reliance should be placed on private manufacture. In time of war the whole resources of the nation are required, and it is inconceivable that in peace time the whole of the manufacturing organisations of the country could be organised on a war-time basis able to supply at a moment's notice the whole of the anticipated requirements. This would lead to the result that the whole of the manufacturing resources would be continually enmeshed in war-time production or waiting for it. The security of the nation in the war depended upon the manufacturing resources of the country, greatly expanded, of course, because the output demanded was overwhelmingly in excess of anything that had been visualised."

After describing the position after the war and the change from wooden to metal construction, the memorandum dealt with the present position as follows:—

"Any aeroplane which is submitted for testing by the Royal Air Force is wholly the product of the designing firm. The Air Ministry issues to aircraft constructors a specification of requirements for a new type of aircraft. The duty of preparing this specification rests primarily on the Air Staff, which consults the technical department as to the possibility of the requirements being met in the then state of the art; and the specification of requirements issued to the industry states the problem in broad outlines. Particulars of desired performance are given, as also are particulars of the military load and of the equipment for which provision must be made. It is then left entirely to the constructor to design aircraft which will meet these requirements, subject to certain standard regulations as to airworthiness.

"A constructor is given a limited time within which to produce his ideas of a machine to meet the requirements, and these ideas are submitted to the Air Ministry. Committees of the Air Ministry examine the information laid before them and decide with which constructor or constructors an order for a prototype shall be placed, assuming it is decided to place any order at all. In due course the machines are delivered, to be subjected at Royal Air Force experimental stations to vigorous and searching tests of all kinds, and on completion of these tests the machine considered to be the best is, in theory, adopted for production; but it does not at all follow that that machine will go into production. Aircraft design is still far from reaching stability. Rapid technical development leads to rapid changes in ideas, and frequently machines have been considered to be obsolete for one reason or another at an early stage.

"Now, it has often happened that a constructor whose machine has not been adopted for production, or, indeed, whose preliminary ideas have not been accepted, has had the courage of his convictions and has built a machine which, in his opinion, having regard to his knowledge and experience of service needs, is superior to any machine which complies strictly with the specification of requirements. Such an aircraft is known as a 'private venture machine' and is designed in accordance with the designer's own specification. Over the last ten years one in every three private venture machines built has been adopted for production by the Royal Air Force, whereas in the case of prototypes built to comply with Air Ministry specifications of requirements only one in six has been accepted for production. This is not in the least any criticism of the Air Ministry. Indeed, it is rather the reverse, because it indicates that the Air Ministry is receptive to new ideas and is prepared to acknowledge the superiority of a private venture design over a design which complies with Air Ministry specification of requirements.

## A Spirit of Adventure

"In the case of engines the designer sets his own standard, and in effect prepares his own specification, which is submitted to the Air Ministry for consideration if the engine is of a type for which Government orders are sought. The initiative rests with the designer.

"The explanation of the pre-eminence of the industry is that it retains its spirit of imagination and adventure. It knows what it can do and desires to provide the Royal Air Force with the best possible aircraft embodying the latest knowledge of the art. But for private venture machines the equipment of the Royal Air Force to-day would be much less efficient than it would have been if the equipment had been restricted to machines which simply met the requirements of the specifications and did not go beyond them.

"Solution of the problem of design of military aircraft involves the incorporation of the lessons of experience in the field as well as provision for rapid production in emergency. The aircraft industry has proved again and again its ability to overcome the difficulties of one of the most complex problems in engineering.

"Examples could be given of machines which, designed to fulfil the requirements of an Air Ministry specification have, by virtue of the advances in research and design made by constructors actually given performances much more efficient than the requirements laid down by the Air Ministry. This is indicative of the great extent to which the ideas of a competitive industry can outrun those of a Government department. It would probably be admitted by the higher ranks of the Royal Air Force that the revolution in performance which has been brought about by private enterprise has entirely altered the conception of air strategy and the mobility of the Air Force.

"It will be understood that the problem which has to be faced by the constructor is not simply the production of a single prototype aircraft. At every stage of the design the question of cost and means of production has to be weighed. The contractor is thus faced with the interwoven problems of efficiency in design and possible rapid production in numbers, although, in fact, he is in the first instance constructing only one or two machines. These are problems so difficult that they demand the very highest qualities of engineering skill, combined with long experience."

Going on to the matter of research, the memorandum related the relations of the National Physical Laboratory and the Royal Aircraft Establishment with the industry and the research departments of private firms, and then proceeded:—

"There is an enormous difference between, on the one hand, research and development work done at research establishments, the correctness of the results of which is a matter of argument or opinion, and, on the other hand, research and development work as embodied in design of actual aeroplanes, when its applicability to the design in which it is embodied is proved or otherwise by the tests on the aircraft. The problem of aircraft design is not solved by logical deduction from exact data. The data do not exist, while the logical processes are not available, principally because the number of variables is too great. Aircraft design is an art and not a science, and the point is soon reached when the resources of science break down and the creative genius of the designer in the exercise of his art becomes paramount. It is a creative art in the sense that the designer must be able to visualise the whole conception of the aircraft which he is designing—performance, outward form and internal structure. Fundamental research work is a good general guide but there is a gulf between the published data at the disposal of the designer and the finished aircraft. If it were not for the large amount of *ad hoc* experimental work done by constructors the gulf between published research and practical design would not be bridged.

"Design units that are too large or hampered by restrictions are undesirable. Flexibility is necessary for rapidly changing conditions; and past experience which led to the system under which constructors are approved for design, as set out above, shows that the necessary degree of flexibility cannot be found in a Government department where the necessity for avoiding individual responsibility results in a multitude of restrictions, regulations and instructions, which is a poor substitute for the judgment of a competent engineer in any particular set of circumstances.

"The problem of aircraft construction, using the word in the sense in which it refers to the design and building of what is known as the "airframe," is one which lies apart altogether from considerations of technical information such as may be supplied by research departments either of the Government or of individual firms. Advances in design depend on the highest development of technical skill, and such advances can only be brought about by the close co-operation of a board of directors who, in the belief that in the end the experiment may be justified and enterprise rewarded, are prepared to back daring and sometimes hazardous schemes which may or may not show an adequate return for the money expended, and to support, through barren years of development and research, men who may fail. All this calls for team work and freedom from restrictions."

## Export Procedure

Instances of research work by private firms were given, and the memorandum then turned to the question of export and publication of technical details:—

"Aircraft on the Secret List remain wholly secret. No information of any kind may be given about them; indeed, their existence may not be mentioned.

"When a machine is transferred to the Part Publication List certain general information about it may be disclosed and preliminary negotiations entered into with prospective foreign purchasers; while machines on the Open List may, in principle, be sold abroad without restriction.

"The decision as to the time when transfer from one list to another shall be made rests with the Air Ministry, though in general a machine is transferred from the Secret to the Part Publication List when it has made its first flight.

"Beyond these regulations the Ministry exercises an overriding veto on foreign sales of military aircraft, including the grant of licences to manufacture abroad. This is in addition to the necessity for obtaining an export licence. It is assumed that the Board of Trade would not grant an export licence without reference to the Air Ministry, but in practice the matter is referred to the Air Ministry by the aircraft constructor direct in the beginning, and the constructor acts in accordance with the wishes expressed by the Ministry.

"No export licence is required in the case of a civil machine.

"There is a clear line of demarcation between a civil machine and a military one, subject to the observation that any civil vehicle may be used for war purposes. Just as an omnibus or an ocean liner may be used for the transport of troops so might a civil aircraft be used for that purpose or for the transport of supplies. It could not, however, be used without modification as an effective war machine except in the absence of adequate aerial defence. A civil aircraft could be so designed that it could be converted into an effective war machine, but that would involve modifications of a major structural character, though comparatively minor modifications might be sufficient to convert certain classes of civil machines into useful war machines for such purposes as reconnaissance and photography."

"The total British export trade in 1934 of this industry was about 25 per cent. of the productive capacity then devoted to Air Ministry work. That represents an important margin of reserve productive capacity, and, in fact, the margin of productive capacity is rather higher than that when all factors are taken into account. This trade is essential to an industry which is subject to considerable fluctuations in turnover. It provides employment, and if this country lost the trade it would go elsewhere."

In the matter of civil air transport it was stated:—

"While the Society believes that there will be still greater and greater development in civil air transport it considers that that development will only come by way of freedom from restrictions and by education and demonstration. If by internationalisation of air transport is meant international control the society must say that it cannot visualise the satisfactory working of a body under international or League of Nations control; and the same remarks apply to a national body subject to international control. What, in the opinion of the Society is required, is freedom from the international restrictions which at present hamper air transport."

## *Allegations Denied*

The memorandum then dealt with other evidence which had been submitted to the Commission, and proceeded:—

"Certain allegations have been made with which the Society must deal.

"It is stated that the vested air armament interest has, by means of a long-period campaign of propaganda, succeeded in leading the organised air interests of the country to believe that the policy of air disarmament is foolish, impracticable and detrimental to British interests. This complaint is mainly based on the statement that the aircraft industry supports certain trade journals by advertising in them. The industry does advertise in these trade journals and is quite prepared to believe that without these advertisments the trade journals could not survive. In fact, however, the industry deprecates publication in a trade journal of matters which belong to the sphere of politics, a subject with which, in the opinion of the Society, a trade journal should not deal, more particularly so in relation to international affairs. It is easy to say that the industry has the remedy in its own hands and could solve the problem by withholding advertising: but the solution is not so easy as that.

"The Society suggests that exaggerated importance is attached to this question of advertising. No public information is available as to the circulation of the journals in question, but it is thought that the circulation is not such as, in the opinion of the Society, would materially influence general public opinion; while the suggestion that everybody, from the Air Minister downwards, would take his views on political matters from a trade journal cannot be accepted."

The conclusions of the S.B.A.C. were summed up in the following passage:—

"The history of the war shows that reliance on State design nearly led to disaster and that when State design and control broke down it was the farsightedness of private enterprise which saved the situation. Reversion to State design or control in an industry which is obliged by progress in design and knowledge to cope with increasingly complex problems would be a retrograde step and would gravely impair the air potentialities of the country."

When Mr. C. V. Allen had finished his outline of the past history and present objects of the Society of British Aircraft Constructors, witnesses were questioned. These included Sir Robert McLean, chairman of the S.B.A.C., Mr. C. R. Fairey, head of the Fairey Aviation Company, Mr. F. Handley Page, managing director of the firm which bears his name, and Lt.-Col. L. F. R. Fell, of Armstrong Siddeley.

Professor Gutteridge, acting chairman of the commission, asked about the position with reference to the export of military aircraft to foreign countries. Mr. Fairey explained that the grip of the Air Ministry on the aircraft industry was such that not a single military machine could be exported without the full knowledge of the Air Ministry. The system of "approved firms" ensured complete control.

Concerning the possibility of converting civil into military aircraft, Mr. Fairey stated that the design of long-range bombers approximated to that of long-range passenger machines. If other types of military aircraft were abolished, the risk of conversion would be increased. This view was also confirmed by Mr. Handley Page.

With reference to new inventions, Mr. Handley Page explained, in reply to questions by Sir Philip Gibbs, that if a new invention was adopted by the Air Ministry it could be kept secret under the Official Secrets Act.

Sir Philip Gibbs said that perhaps the main charge against the British Aircraft Industry was that the firms acted together and formed a kind of friendly ring in order to establish prices. This was refuted by Mr. Fairey with the remark, "Completely untrue." Sir Robert McLean agreed.

The question of selling engines to Germany was also raised, and Sir Robert McLean stated that, as the engines were sold to Germany with the permission of the British Government, he assumed there was no danger to be expected on that score.

To Dame Rachel Crowdy's statement that the accusation had been made that the technical delegates at Geneva opposed total air disarmament, Sir Robert McLean replied that he took it that the delegates were carrying out the instructions of their Government.

Finally, it is interesting to note the terms of reference under which the Commission has been called:

"(1) To consider and report upon the practicability and desirability (both from the national and international point of view) of the adoption (a) by the United Kingdom alone, (b) by the United Kingdom in conjunction with the other countries of the world, of a prohibition of private manufacture of and trade in arms and munitions of war, and the institution of a State monopoly of such manufacture and trade.

"(2) To consider and report whether there are any steps which can usefully be taken to remove or minimise the kinds of objections to which private manufacture is stated in Article 8 (5) of the Covenant of the League of Nations to be open.

"(3) To examine the present arrangements in force in the United Kingdom relative to the control of the export trade in arms and munitions of war, and to report whether these arrangements require revision, and, if so, in what directions."

## FOR BLIND-FLYING TRAINING

**The new Miles Nighthawk has an ingenious arrangement of hoods by which the pupil is prevented from seeing the horizon, although he can see, and fly by, the instruments fitted to the dash. The instructor retains a very wide angle of view. In the spring the Nighthawk will become available as a luxurious four-seater.** (*Flight* photograph.)

# Correspondence

*The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for publication in these columns.*

## COMMERCIAL EFFICIENCY

WITH reference to the letter from Mr. Noel-Brown in last week's issue of *Flight*, it appears to me that there are one or two points which require clearing up.

May I first of all say that I have no connection, financial or otherwise, with Phillips and Powis Aircraft, Ltd., nor have I any interest in the production of Miles aeroplanes, and therefore I have no axe to grind.

Now, there appear to me to be a number of contradictions as well as inaccuracies in Mr. Noel-Brown's letter.

First, he says that the Monospar should be taken as a four-passenger machine and later that the number of passengers should be taken as those which can be carried when the aeroplane is equipped with luggage accommodation.

While I in no way wish to decry the qualities of that excellent aeroplane, yet when it was demonstrated by the makers at our local aerodrome last summer I distinctly remember that all luggage had to be jettisoned when a fourth passenger was carried—in other words, the machine was an occasional five-seater.

Taking a machine of comparable purpose, the Miles Merlin has permanent accommodation for four passengers and luggage.

Again, Mr. Noel-Brown says that a twin-engined machine has a greater commercial value on account of its greater safety factor, and yet he agrees that, among the most important factors which an air-line operator must consider are the questions of relative maintenance costs of engine and airframe and also of the time lost due to overhauls, etc.

On both these latter points the single-engined machine scores heavily, as it does on a point mentioned later in Mr. Noel-Brown's letter, when he recommends small aircraft, with the attendant reduction in overhead costs.

Mr. Noel-Brown cannot have read my letter very carefully, since he says that I endeavour to prove the superiority of Miles aeroplanes by drawing up a list of aircraft irrespective of whether they are single- or twin-engined machines. If he refers to my letter again he will see that I also gave a second list divided into single- and twin-engined types.

In conclusion, I should like to add that my experience of the upkeep of aeroplanes, which extends over some years, has been that, from the point of view of initial cost, depreciation, repairs and maintenance, wooden construction is vastly preferable to metal and fabric. D. L. BROWN.

Hove.

I SHOULD like to answer some of the criticisms which Mr. Noel-Brown makes of my formula for Commercial Efficiency. His comments on Mr. W. D. Brown's use of my formula are pretty well the same as mine, published in *Flight* the week before.

(1) My definition of an air-line machine, which was quoted by Mr. Noel-Brown himself, shows that there are no single-engined types. Therefore, the question of the safety factor of single-engined versus multi-engined aeroplanes does not arise.

(2) When two of the biggest exporters of commercial aeroplanes in the world (De Havillands and Fokkers) use wooden construction, it would certainly not be reasonable to say that a metal aeroplane must always have a higher commercial efficiency than a wooden one. Metal structures are more durable, but wood is more easily obtained and repaired than high-tensile steel or special Dural sections.

(3) According to Mr. Noel-Brown's own figures, airframe maintenance amounts to only about one-tenth of the total fuel and maintenance costs, so that a big difference in airframe maintenance costs will make very little difference to the total.

(4) If all the aeroplanes are priced as fitted with standard equipment, then they are on a fair basis of comparison, because blind-flying equipment will be an extra, whatever aeroplane is chosen. In the exceptional case of blind-flying instruments being included in the price, the manufacturer will not fail to let the prospective buyer know all about it.

Most of my critics seem to assume that the prospective air-line operator is an unintelligent nit-wit who will just use my formula without taking into consideration any other characteristics of the aeroplanes which may make them suitable for his use

My formula for Commercial Efficiency gives a reasonable and simple basis for comparison, which, when used with an intelligent regard for the operator's own particular requirements, will tell him which aeroplanes are worthy of a lengthy and detailed investigation. If Mr. Noel-Brown can evolve a better formula than mine, without making it more complicated, I am sure that air-line operators will be only too pleased to use it. E. N. B. BENTLEY.

Walton-on-Thames.

## AUTOGIRO PROS AND CONS

IN his letter in last week's issue Mr. R. P. Opie is quite correct in stating that no Autogiro has yet been flown with a performance comparable with that of fixed-wing aircraft capable of carrying forty passengers, but it is equally true to state that no aeroplane has yet been produced which is capable of landing like an Autogiro.

It is essential, therefore, when comparing the performance characteristics of two distinct types of aircraft (particularly where the design of one is based on conventional and the other on unconventional ideas) that some common objective should be selected which is acceptable to each school of thought.

If it can be assumed that the basic reason for our wanting to make use of the air at all is purely as a means of transport, then Mr. Opie should not consider the future of the Autogiro as hopeless if a rotor system cannot be designed to lift 50 to 200 tons, as the individual is always a potential owner of a car rather than of a train. Further, the prosperity of the motor industry always has been, and still is, for that matter, dependent upon individual as opposed to collective ownership.

Actually it would appear that the only real commercial future of the aeroplane lies in the development of machines capable of carrying big loads over long distances at high speeds, the particular sphere of usefulness of which will be strictly comparable with that of long-distance trains; and that the Autogiro will prove itself to be the only type of aircraft capable of adapting itself to those particular duties at present carried out by the omnibus and car.

There is no reason why a single rotor system should not lift 50 to 200 tons. A single rotor is obviously more efficient than two in series, and if two rotors are used one above the other the results obtained are inferior to those from a single rotor.

The "direct-control" type of Autogiro, therefore, is not limited to one rotor owing to difficulties in control, as Mr. Opie suggests, but because experience has proved that it is the only method by which a good all-round performance can be obtained.

Twickenham. R. A. C. BRIE.

## LANDING FEES

I NOTE from an article in *Flight* that there is some difficulty in regard to payments at aerodromes for the landing of private machines.

I would suggest that the resources of aerodromes should be pooled for this purpose and that books of coupons, purchasable by private owners, should be made available to cover certain attentions to the machine. W. H. LAWES.

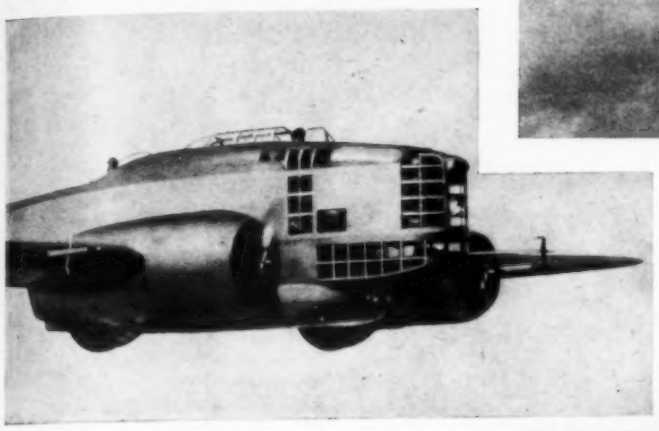
Portsmouth.

## BUSINESS—THE BEST WAY

MR. W. K. BRETT, of the Shell Company of Egypt, has completed a flying tour of some 15,000 miles in West Africa on behalf of his firm. He landed at about forty different aerodromes, at each of which he interviewed officials and agents, examined equipment and stores, and compiled reports on the aerodrome facilities available.

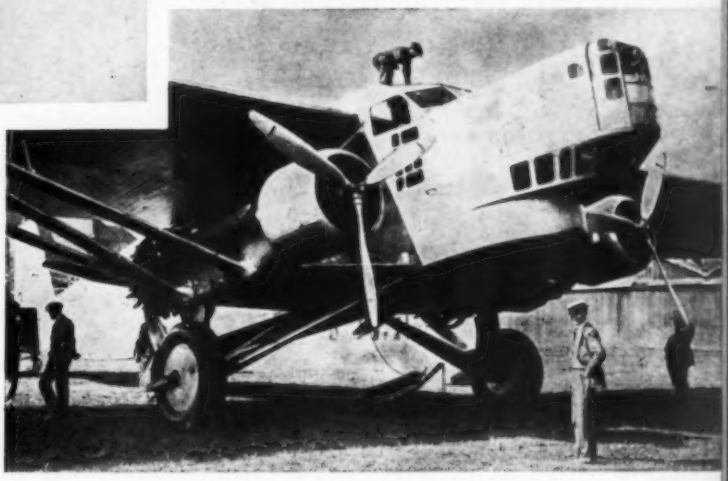
Mr. Brett, who carried with him a great deal of equipment, such as smoke bombs, emergency rations of food and water, and sandbags for picketing, reports that his machine, a Percival Gull, gave him "as much confidence in its reliability as any he had ever flown." A photograph of Mr. Brett and the Gull appeared in *Flight* of October 24.

A real flying citadel : the Breguet 460-M5 multi-seater is estimated to do 239 m.p.h. at over 13,000 ft. with a pair of 900 h.p. Gnome Rhone Mistral Majors



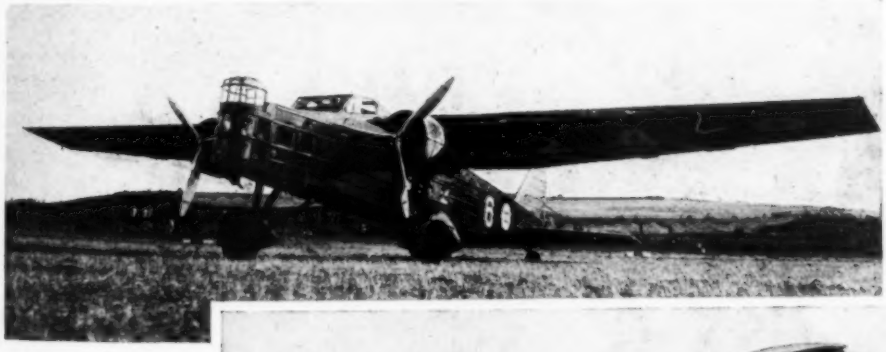
The Dewoitine D.371 single-seater is being supplied to the French Navy as a fleet fighter and to Lithuania. Its Mistral Major gives a speed of 235 m.p.h. Two *canons* may be carried.

The 3,600 h.p. Farman F-221 (below) is a champion weight lifter with four Mistral Majors. In a later form it is being built for the French Air Service.

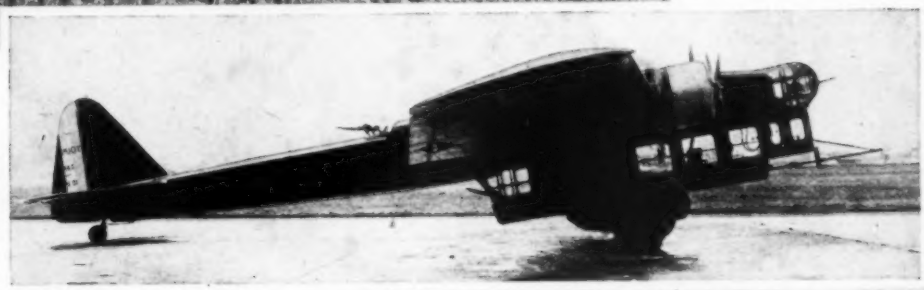


# FASHIONS from FRANCE

*Some Bombers, Fighters and a Transport : High Speeds with Powerful Radials.*



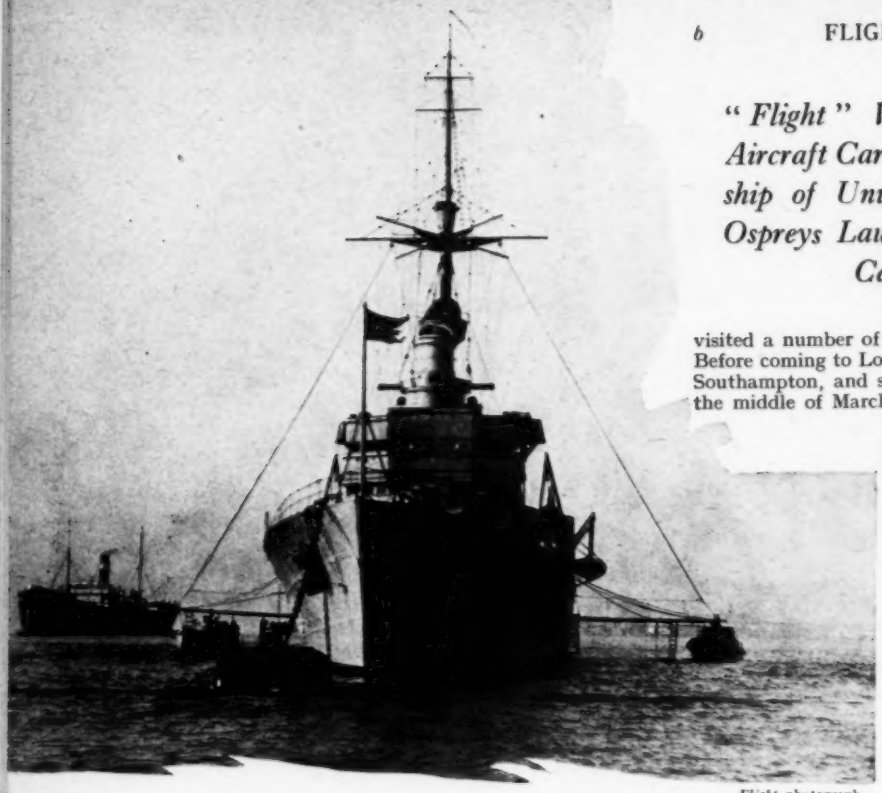
This is the Marcel Bloch 200 (two Mistral Majors) which is now in every-day use. It does about 180 m.p.h. A number of French firms are building this machine under licence for the French Government.



The distinctive outline of the big Amiot 142 (two Mistral Majors) is apparent here.

Air France has adopted the Potez 62 as a standard type. It does 201 m.p.h. with two moderately supercharged Gnome Rhone Mistral Majors. Some interesting facts regarding a Gnome Rhone link with the British industry appear elsewhere in this issue.

*"Flight" Visits the New Swedish Aircraft Carrier "Gotland": A Warship of Unusual Interest: Hawker Ospreys Launched by Unconventional Catapult Routine*



*Flight* photograph.

# FROM NORTHERN WATERS

OF all the strange craft seen in London river none, for many years, can have warranted greater attention than the *Gotland*, which anchored last week off Gravesend on a courtesy call.

H.M.S. *Gotland* (the "H.M.S." holds good in Sweden, where it signifies *Hans Majestäts Skepp*) is, perhaps, best described as an aircraft-carrying cruiser, and bristles with features which should interest some of the more impecunious or thrifty nations desirous of running efficient navies. It is conceivable, in fact, that this type of vessel might find useful employment in the fleets of major powers.

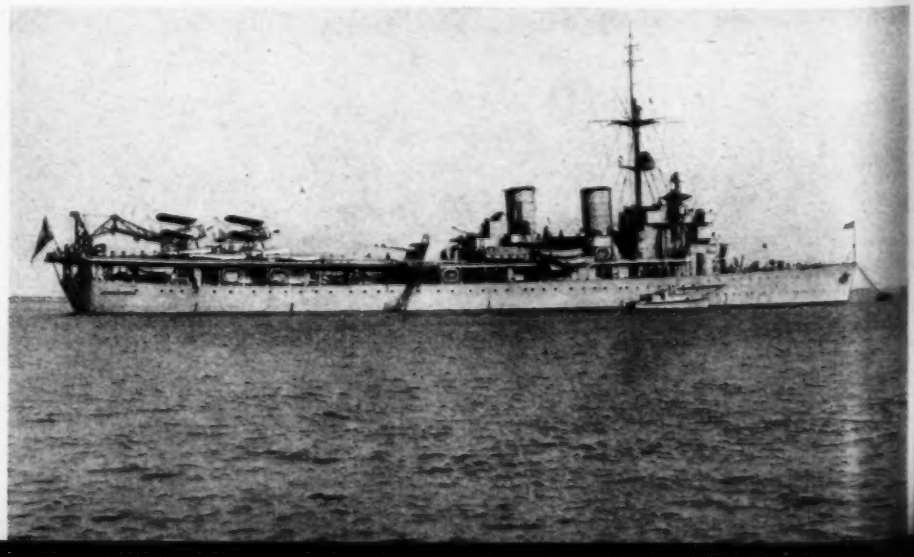
*Flight's* visit to the *Gotland* almost coincided with that of Vice-Admiral E. R. G. R. Evans, R.N. ("Evans of the *Broke*"), Commander-in-Chief of the Nore. He was received on board by Commander K. G. Rudberg, who pointed out to him features of his ship.

The *Gotland* is now completing her first cruise in foreign waters, during which she has visited a number of ports, sailing as far as Vigo in Spain. Before coming to London she had called at Dartmouth and Southampton, and should now be in Amsterdam. About the middle of March, having called at Amsterdam, Hamburg and Oslo, she will return to Karlskrona, her base.

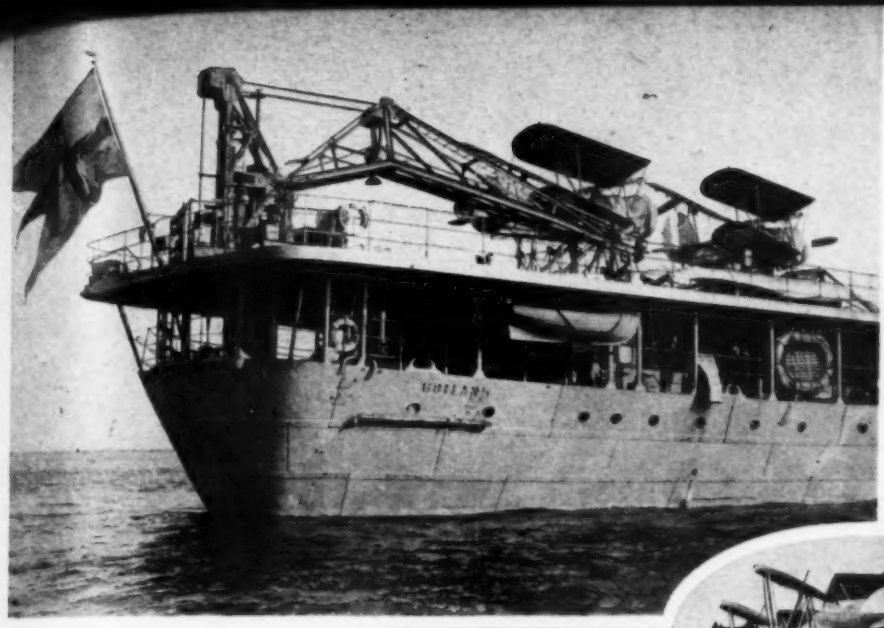
It is frankly admitted that the *Gotland* is an experiment. She is the only vessel of her kind in the Swedish, or any other, navy. Displacing about 5,000 tons, she was completed at Gothenburg in 1934, is 442ft. long, has twin screws, and turbines of 39,000 h.p., which will drive her at 28 knots. Her complement, which, during her visit to London included a number of cadets, numbers 450.

For a vessel of her tonnage the *Gotland* carries—apart from her aircraft—a fair armament, comprising six 6in. guns, four 3in. guns (which can be used at will for high-angle work) and numerous smaller anti-aircraft weapons of various calibres. In addition to these guns, which are all products of the Bofors works, there are six 21in. torpedo tubes, and it is understood that provision for carrying 100 mines was made in her design.

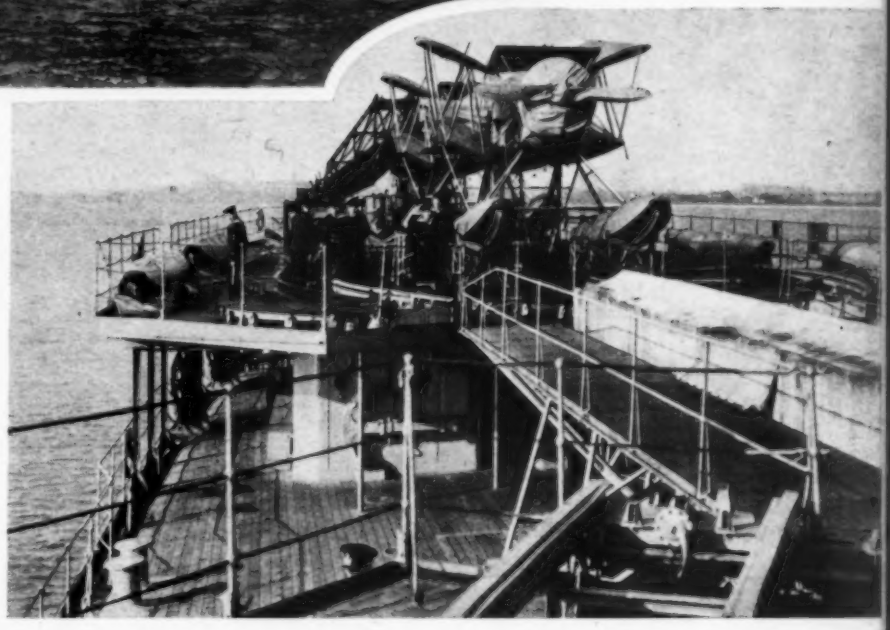
Up to eleven Hawker Osprey fighter-reconnaissance seaplanes (only two are on board at the moment) are carried on a large platform in the after portion of the vessel. Each machine is provided with a handling trolley which runs on a set of rails leading forward to a compressed-air-operated catapult of German manufacture. One by one the Ospreys are taken on to the catapult and launched, the trolley of each one being wheeled over to a continuation of the rails forward of the catapult, where it does not interfere with the handling of subsequent machines. Detailed information on the system of manipulating and launching them is not forthcoming, but amazing rapidity is said to have been attained. One understands, in fact, that it is possible to get eight machines off in five minutes. Should catapulting be inadvisable or impracticable the Ospreys may be lowered over the specially shaped stern



**This picture indicates the length of deck occupied by the aeroplane tracks and the catapult.** (*Flight* photograph.)



The stern of the *Gotland* (left) is of somewhat unusual formation. This view shows the crane and the two folded Ospreys. In the lower picture the system of tracks leading to the catapult is visible. In the foreground are rails for the reception of the empty trolleys. The catapult is of German manufacture and is operated by compressed air.
(*Flight* photographs.)



by a crane which is normally used for hoisting the machines inboard after catapulting.

The crew seem immensely proud of its Ospreys, as well they might be. The initial order for Pegasus-Ospreys for Sweden was for four machines, but a repeat order was placed some six months back. The medium-supercharged Pegasus of about 600 h.p. is specified, being built in Sweden under licence. For operation from land, incidentally, the Swedish Air Force has adopted Pegasus-engined Harts, using them very extensively for dive bombing. Fifty machines of this type are actually in course of erection over there.

The *Gotland's* Ospreys are intended mainly for reconnaissance and fighting; wireless and cameras, but not bombs, are carried. It is the pilot's duty to fly his machine and use his front gun; the observer has complete charge of all the photographing and wireless operating.

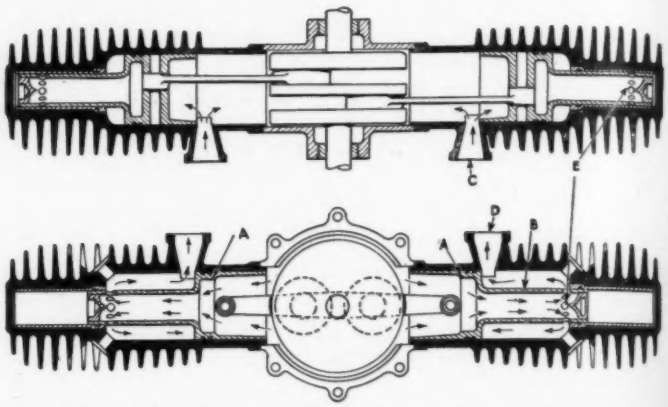
There are certain disadvantages which are readily apparent in the design of the *Gotland*. She has, for example, a single catapult (although her original design provided for two—one port and one starboard)—and a well-placed shell would suspend flying operations indefinitely. Then, again, all the Ospreys are stored, folded, close together on an unprotected deck. But in answer to this, there is the argument that a shell of fairly large calibre dropped on the flight deck of a conventional carrier would most likely prevent the operation of aeroplanes; those, at least, with wheel undercarriages.

But, in any case, the *Gotland* should prove a distinctly useful and versatile vessel, and we are glad to have seen her over here.

**Vice Admiral E. R. G. R. Evans, R.N., Commander-in-Chief of the Nore, with Commander Rudberg after being received on board the *Gotland*, which he inspected with considerable interest.**
(*Flight* photograph.)

# AN UNUSUAL TWO-STROKE

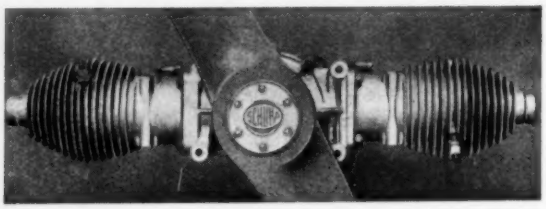
## *Unconventional Gas-transfer System in New German 23-h.p. Engine for Ultra-light Aircraft*




**Studied in conjunction with the text, this sectional plan and elevation of the Schliha engine explain its mode of operation.**

WELL known in the past by virtue of its motor cycle work, the Schliha Company of Berlin has just brought out a remarkably "clean" flat-twin two-stroke engine, known as the F.1200, for ultra-light aircraft.

The new engine is unconventional in its method of operation. A study of the accompanying diagrams will show the working principle. Each piston (A) carries on its crown a tubular extension (B) projecting into a corresponding extension of the cylinder head. This tube is blanked at its outer end and has a ring of holes (E) near this extremity. The upper drawing shows both pistons at their top dead centres, and it will be observed that mixture (indicated by arrows at C) is entering on the crank case side of the pistons.



**The Schliha engine without its carburetters and magnetos.**

As the pistons descend in the cylinders the gas is compressed in the crank case, and passes through the interior of the pistons into the extension tubes. Meanwhile, the pistons, on reaching their bottom dead centres, have uncovered the exhaust ports (D). Simultaneously, the annular holes in the extension tubes are uncovered as the tubes emerge from their guides, and the compressed gas is allowed to pass into the working cylinders; the pistons then rise, cover the exhaust ports and compress the charge in the working cylinders. On the charge being fired by the plugs the pistons move downwards and the cycle is repeated.

Among the advantages claimed are very efficient cooling of the pistons by the passage of the cool incoming gas; decreased piston wear, owing to the guide effect of the extension tubes; and good turbulence and scavenging.

The crank case is cast in two sections in Elektron, and the cylinders are also of Elektron, being fitted with steel liners. The pistons are of Titanal alloy, and the H-section connecting-rods, which have roller big-end bearings, are of chrome-nickel steel. The two-throw crankshaft is of the same material and runs in two roller and one ball bearing.

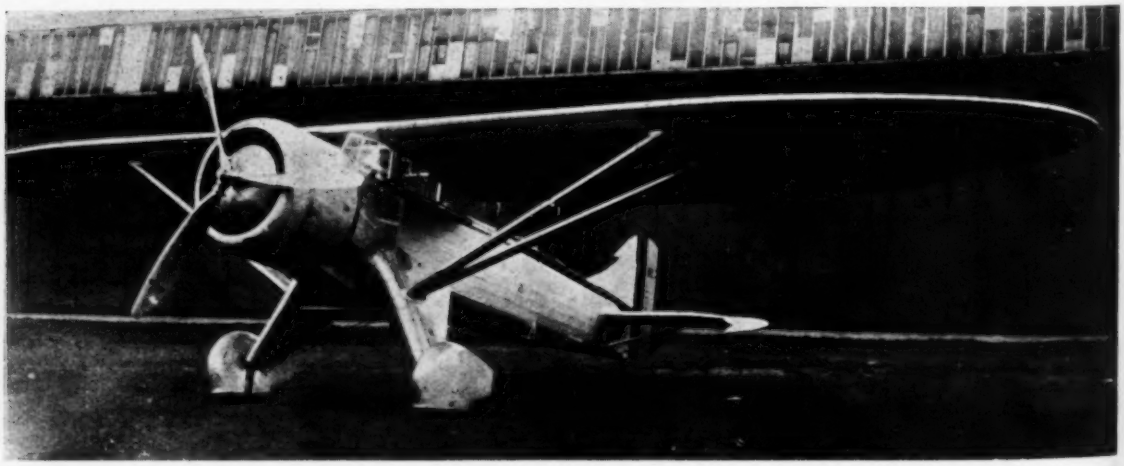
Lubrication is on the petroil principle in the proportion of one-twentieth part of oil. There are two carburetters and two magnetos, and two sparking plugs per cylinder. The two magnetos are arranged at the rear of the crank case.

Principal data on the Schliha engine are as follows:—

Bore, 94 mm.; stroke, 100 mm.; total capacity, 1,196 c.c.; normal power, 23 h.p. at 2,200 r.p.m.; maximum power, 36 h.p. at 3,100 r.p.m.; weight dry (without airscrew hub), 75.8 lb. (34.4 kg.); weight per h.p., 3.3.-2.12 lb. (1.5 to 0.956 kg.); fuel consumption, 0.57 lb./h.p./hr.; length, 53 mm.; width, 860 mm., height, 225 mm.; price in Germany Rm. 950 (approximately £77 10s. at the present rate of exchange).

FRITZ WITTEKIND.

## A BELGIAN OBSERVER



**Fitted with the French Gnome-Rhone Mistral Major fourteen-cylinder radial of 870 h.p., this Belgian Renard R-32 observation monoplane—which also functions at will as a two-seater fighter or light bomber—has a maximum speed of 230 m.p.h. at 13,120 ft. It stalls at 59 m.p.h., has a service ceiling of over 37,000 feet and a range of 800 miles. Its somewhat peculiar wing is said to show interesting characteristics on climb and during a landing: the machine will reach 16,400 ft. in 7 minutes. A notable feature is the cockpit enclosure.**

# COMMERCIAL AVIATION

## — AIRLINES — AIRPORTS —

NOCTURNE: One of the United Air Lines' Boeing 247's in front of the terminal buildings at Burbank Airport, California—which is generally considered to be America's model airport.

## THE WEEK AT CROYDON

### *Saving Time : Notable Passengers : Tramps of the Air : This Low-Flying Business : The First Scandinavian Service*

ON board the *Europa*, crossing from America, were a Mr. and Mrs. Larsen, who had no time to waste. Imperial Airways were communicated with from mid-Atlantic, with the result that when the boat docked at Cherbourg a D.H.86 awaited them. They arrived at the dock-side at 9.30 a.m., passed through the necessary, and, doubtless, tedious formalities, and were away by 10.20, arriving Croydon at 11.30, thus saving the best part of a day, for passengers by the boat do not normally arrive in England until about 9.0 p.m.

Another notable Imperial passenger last week was Master Jeremy James Maberley, aged five years, who made his third unaccompanied air journey to London from Paris. He is at school in England, but he lives in Paris, and thus, like a good cosmopolitan, he views air travel as a normal and pleasant way of getting about. On arrival at Croydon he was questioned about the possession of dutiable articles, to which he replied that, of course, he had some, and jolly fine ones—to wit, a brand new toothbrush, a remarkable box of paints, and a number of new and part-worn pencils of attractive colouring. These he produced with the light of battle in his eye, prepared to dispute whatever sum they were assessed at. I imagine that he was disappointed when no duty was charged, and I fancy that his treasures lost a little of their value (a very high one) in his eyes.

On Friday morning, by K.L.M./A.B.A. Scandinavian Air Express, Prince Axel of Denmark left England for Scandinavia. He is one of the most regular air line travellers. By the K.L.M. 1.30 machine on the same day travelled Lord Caledon to Allahabad, and a lady making the whole 9,000-mile flight *via* Amsterdam, to Batavia. Incidentally, Mr. A. Plesman, K.L.M. Managing Director, was on the same machine.

It is permissible, perhaps, to recall the fact that, some time ago, one of the companies at Croydon was fined £5 for negligence when a lady brought in an unobserved dog, since now I see that a lady has travelled all the way from America by boat to be fined for landing a dog at Plymouth! One assumes that it was seen on the voyage. Anyway, the shipping company was not fined.

The son of the Iraqi foreign minister, Gen. Nuri Pasha, injured, I believe, in an air crash, was flown by the R.A.F. from the scene of the accident to Aleppo, and there he unfortunately missed the air connection and had to take the Orient Express to Paris. From Paris to London he was flown last Saturday by Capt. Holmes in *Delphinius*, when, despite a 40 m.p.h. wind, he had a very smooth trip.

I was much amused recently by an article appearing in one of the daily papers about "Tramps of the Air." They apparently do desperate deeds which the air liner commanders will not undertake. One of the things for which they apparently obtain full marks is that of conveying invalids (people who were already sick before they started) across the Channel in weather which is regarded by Imperial and Air France pilots as too bad even for hale and hearty passengers. Safety apart, one of the golden rules of air ambulance work is to study weather conditions.

People of the air transport community at Croydon are plagued from time to time with letters from the Air Ministry which record that influential residents near the airport have complained of unnecessary low flying.

## Commercial Aviation

especially when machines are coming in to land. I do not know if the department concerned ever informs these householders that pilots are very unlikely, for their own sakes, to come in lower than is necessary over such inconveniently sited residences—inconveniently sited from *our* point of view. If the operators ever moved from Croydon and the airport became a housing estate there would surely be petitions to the Air Ministry and a great fuss and bother made by these very same people.

The great event of the week was the opening of the first British service to Scandinavia on a line hitherto operated only by Dutch and Scandinavian interests. The new British service was inaugurated, on Friday, February 7th, by British Continental Airways. Sir Percy Grahame Mackinnon, chairman of B.C.A., was there to see the machine off. I understand that the route will be by Amsterdam and Hamburg, and the machine will leave Croydon at 9.0 a.m., arriving at Hamburg at 1.30 p.m., Copenhagen at 3.35 p.m., and Malmo at 4.5 p.m. The return journey will bring travellers to Croydon at 4.35 p.m.

During the winter the service will run outwards on Tuesdays and Fridays and inwards on Wednesdays and Saturdays. As soon as spring conditions warrant a daily service it will be put into force. B.C.A., the first non-subsidised British firm to become members of the I.A.T.A., was the first British firm to run a service to Amsterdam, and is now the first company to run a service to Scandinavia. Friday's flight was an inaugural one, and the schedule was actually due to be started on Tuesday.

A. VIATOR.

### Caudrons for Air France

FOLLOWING a thorough testing on its various routes, Air France has ordered six Caudrons of the Goeland type. This is a high-speed, six-passenger, feeder-line machine, fitted with a pair of 220 h.p. Renaults, which cruises at 167 m.p.h. The new equipment is intended for African service.

### Navigation Examination Results

IN *Flight* of December 12, the successful candidates from the London centre in the October Second Class Navigator's examinations were given.

Successful examinees at Heliopolis and Singapore were: N. Alexander, C. E. F. Arthur, A. J. Coster, C. F. Elder, C. Kirkland, J. H. H. Luxton and G. F. Wood. Of the sixty-two entrants, only twenty-two passed. The next examination will be held during the week commencing March 23.

### Imperial De-icers

SOME time ago it was announced in *Flight* that Imperial Airways were to fit the Dunlop Anticer to at least one machine in the fleet. It is now learned that two machines are being so fitted. One is a De Havilland 86, and the other is the Vickers Velox. It is probable that the 86 will go into service about the middle of next month, or perhaps earlier, on the London-Budapest route. K.L.M. is also experimenting with this equipment.

### Mails to Nigeria

THE Postmaster General announces that mails will be carried by the weekly service to Nigeria and the Gold Coast, which started on February 9. They will be conveyed to Khartoum by the England-South Africa service, which leaves London on Sunday, and thence by the branch service, details of which have already appeared in *Flight*, from Khartoum to Kano (Nigeria). Transmission from Kano to Lagos and Accra will, for the present, be by surface transport. Mails will be due to reach Kano in five days, Lagos in eight days, and Accra in eleven to fourteen days after leaving London. The service will also be available for correspondence for Tchad. The air postage rates to Nigeria, Gold Coast and Tchad will be 6d. per half ounce for letters and 3d. for post-cards.

### The Heston Gasometer

TIMES without number have transport pilots and others complained of the danger, particularly at night or in Q.B.I. conditions, of the Southall gasometer, which is not lighted. In fact, the matter has even been one for minor discussions in the House since 1932.

The G.A.P.A.N. is co-operating with everyone concerned in order to focus attention on the problem before something really unpleasant occurs. As a matter of fact, the Air Ministry has no power to insist that it is lighted since their jurisdiction terminates 500 yards from an airport boundary; the Heston people disclaim responsibility because the gasometer is an obstruction to general navigation and not to the airport; and the gas company, though willing to have it illuminated, are not prepared to contribute to the expense of the necessary electrical installation.

Presumably someone will need to hit it good and hard—with considerable loss of passenger and local life—before anything whatever is done.

### Stockholm's Airport

MANY years of work will be crowned when the Stockholm airport, which will be one of the most important in Scandinavia, is opened on May 23. On the following day flying displays will be given, and May 25 has been set aside for flying demonstrations of new types.

The Stockholm airport, which is little more than four miles from the centre of the town, will be one of the most up to date in Europe. The dimensions are certainly moderate—in the principal directions the runs are from 800 to 1,000 metres—but the airport is provided with permanently paved runways on a scale which has not as yet been seen in any other European country. These runways are 50 metres wide and 800 metres long. Altogether some 200,000 square metres of the airport will be surfaced. The airport will also be equipped with a first-class lighting plant, consisting of five floodlights of 10 kW. each, with boundary and extensive obstruction lighting. Even the runways will be marked by means of special lights. Buildings are being erected which will house the necessary wireless equipment, meteorological, and Customs staff.

At least two British air line companies will be flying to Stockholm as soon as the new airport is ready.

**INAUGURATION: Ready for the first Scandinavian service which is now being operated twice weekly by British Continental Airways. From left to right they are: Flt. Lt. A. P. K. Hattersley (Captain), and Messrs. Farey Jones, J. R. Bryans, Maxwell Bryans and A. D. Adkins.** (*Flight* photograph.)

## Airwork Overseas

MR. ALAN MUNTZ, managing director of Airwork, is leaving on February 27 on his annual tour of inspection of the activities of Airwork and its associated companies in the Near and Middle East. Mr. L. A. Lafone, Misr-Airwork's late superintendent of aircraft operation, has left Egypt on his return journey to England, where he is to take up the post of manager of the Technical Services Department at Heston on March 1. Flying Officer D. L. Dustin left England on February 6 to take up a three months' appointment on the air line piloting staff of Misr-Airwork.

## Records

COMMERCIAL AIR HIRE has purchased the first of the fleet of reconditioned Dragons and Dragon Rapides now on the books of the Airwork sales department. Owing to the lengthening daylight hours, freight for Paris by contract with the Gramophone Company is already being taken from Heston to Croydon by air when weather permits. It is delivered at Heston in the evening and leaves Croydon for Paris next morning. Commercial Air Hire has now obtained a similar contract from the British Jaeger Instrument Company and goods will be handled *via* Heston in the same way.

## A to Z

THE February edition of Hutchinson's A to Z time-table, which has been thoroughly revised, is an extraordinarily complete and easily understood publication. It is actually divided into six parts.

The first of these comprises a full time-table, under the names of the towns, giving the rail, coach and air services from London, with fares and a reference map. The second and third parts give local connections in the provinces and in London. Foreign travel by air, train and boat is covered in the fourth part, and steamship sailings in the fifth part. The last section contains thirty-two pages of maps.

## Southampton's Year

DURING 1935 the Southampton airport has been equipped so as to be suitable for the operation of twenty-four-hour services by the installation of full night-lighting equipment, completed in November. This equipment consists of three 4½-kilowatt floodlights in laminoid housings, obstruction lights, an illuminated wind indicator, and a neon beacon (flashing the letters "SN" in morse), which were supplied by Chance Bros., of Birmingham, and boundary lights, which were supplied by the General Electric Company. This equipment is all connected up in such a manner that one man, situated in the control tower, can operate any part of the system.

Customs and immigration facilities are now available, and it is expected that with the next few weeks the facilities will be completed, as explained in last week's issue, by the installation of D/F equipment.

Considering the difficult time-table arrangements necessitated by the beach-landings, Jersey Airways have operated a very successful service to Jersey. In March they transferred the whole of their maintenance work to Southampton. Railway Air Services again used the airport during their summer season as a connection between their Liverpool-Brighton service and the Isle of Wight ferry, the latter service being operated in conjunction with Spartan Air Lines. Quite a number of the passengers carried between Southampton and Liverpool were such people as stewards from the ships, whose homes were in Liverpool and whose ships were using Southampton. To this class of people, with perhaps three days' leave between sailings, the Liverpool service was a great attraction. P.S. and I.O.W. Aviation, Ltd., had quite a successful season in the operation of their Ryde and Shanklin ferry service and, for a time during the summer, ran a daily service to Paris *via* Portsmouth.

During 1935, twenty-three regular daily scheduled air services were operated as well as charter services to various places—mostly in connection with the shipping traffic. Commercial traffic reached its peak intensity in August, when arrivals and departures of passengers totalled 5,514, arriving aircraft totalling 776, whilst departures numbered 778.

The final commercial traffic figures for the twelve months ending December, 1935, were as follows: Passengers arriving and departing, 20,331; commercial aircraft arriving, 3,655; commercial aircraft departing, 3,653.

These figures are the first recorded for a complete year since the Southampton Municipal Airport was opened in 1932, there being no regular commercial air transport at the Airport until 1934.

## Tatas and the I.A.T.A.

IN *Flight* of January 16 it was stated that British Continental Airways was the only unsubsidised company to be admitted to membership of the International Air Traffic Association. Actually, this is not quite true. Tata Sons, Ltd., of Bombay, became members of the association in 1933.

## No Subsidy for Indian National

THE Finance Committee of the Legislative Assembly has rejected a proposal that Indian National Airways, who are associated with Airwork, might receive a Government subsidy of £8,300. This would have enabled the company to continue the existing twice-weekly Lahore-Karachi mail service and to maintain head office organisation capable of developing further services which will be required when the new Empire mail scheme comes into operation at the beginning of 1937.

## Cloud Flying

THE ROYAL AIR FORCE is carrying out special cloud flying operations between 3 p.m. on February 18 and 3 p.m. on February 21, and civil pilots are asked by the Air Ministry to avoid flying in cloud within the danger area. This area is roughly bounded by lines joining Clacton-on-Sea, Southend, Sheerness, Beachy Head, Guildford, Slough, Hatfield, and Clacton. The lines between Clacton and Southend and between Sheerness and Beachy Head follow the coast line.

## Before Dawn

WHILE Mr. S. L. Turner is in America on a business holiday—he intends to purchase something really fast while he is out there—Mr. Boitel-Gill is assisting Mr. Duggan on Wrightways' early morning Paris service with one of the Dragons. The other Dragon, which is fitted with a P.B. automatic pilot, is at present undergoing its C. of A. overhaul.

This automatic pilot was, a few months ago, the central figure in what the newspapers might have called a "drama of the air"—a drama which was funny enough in retrospect. Mr. Turner was proceeding to Paris on his lawful occasions, but without his radio operator, when he remembered that he had left something at the rear of the cabin. Leaving the P.B. in charge, he marched firmly down the gangway—but too firmly and too quickly for "George." The Dragon stood on its tail and Turner stood on his sandwiches—the only fact which appeared to have caused him any real embarrassment.

Incidentally, that one-time dawn service expert, Flt. Lt. Pugh, has been seen again at Croydon recently. Apparently he has been "lent" by Spartans (alias British Airways) to Crilly Airways—presumably because his Avro 642 experience is valuable where the Fokker F.12s, used on the Crilly Lisbon service, are concerned.

It is an open rumour at Croydon that British Airways have more than a passing interest in Crilly Airways. With Stapleford still "under the weather," British Airways continue to use Heston and the exceptionally large number of uniformed pilots to be seen there forms a source of irritation to at least one small brown dachshund whose habitation is Hanworth.

**ACCLAMATION: Crilly Airways' Fokker F.12, *Lisboa*, surrounded by an interested crowd at Lisbon after the inaugural flight. A daily service will be started as soon as the aerodromes are really fit for use after the heavy rains.**

# Private Flying

## Topics of the Day

### Silence

AT one time it used to be imagined that noises of various kinds were inseparable from a single-engined cabin machine. The more susceptible pilots and passengers considered that a temporary headache was a necessary evil after a long flight in any closed machine with a slipstream illogically flowing along the fuselage.

Last week I sat about in the sky in the latest B.A. Eagle. The fact that I had no stick to hold or rudder bar to depress gave me a better chance of treating the machine as a vehicle rather than as a flying machine, and the words "sat about" describes the sensations as well as anything. With one possible but doubtful exception it is the quietest single-engined cabin aeroplane in which I have ever travelled. There is a certain amount of engine noise and a modicum of inevitable vibration, but of other sounds there is not a trace.

At cruising revolutions the new "Rumbolded" Eagle is a great deal quieter than many of the most expensive cars—so much so that I studied the air-speed indicator with unbelieving eyes and felt that this was private air travel as it should naturally be. On full throttle in level flight there is still no sound from the air stream, though the engine is naturally more noisy and it is necessary to raise one's voice a trifle.

### Detail Design

EXCELLENT though soundproofing arrangements can be, it has always seemed to me that such quietness is largely a result of general design, whether accidental or otherwise, and all the work in the world cannot always do more than tone down the cacophony in the case of a machine which is naturally noisy. The fact that the most unexpected machines *are* quiet suggest that designers do not really know quite what is happening to the airflow.

Nevertheless, the use of more rigid windows and more generously designed detailed fittings would prevent the most aggravating of all noises—and these noises are not noticeable only in cabin aeroplanes. In some cases it is necessary to adjust the throttle setting most carefully in order to "fade out" the worst of the ditherings and rattlings. Unfortunately, different fittings often vibrate at different engine speeds and one can only ring the changes as one becomes finally neurasthenic on each series of noises.

It is curious that light aeroplane designers who have no difficulty in producing machines from which the wings do not depart even after considerable provocation are often unable to design a small lever in such a way that it does not either vibrate or come off in one's hand while performing miracles of ambidexterity during a difficult approach. Fortunate it is that control columns are more firmly attached.

### Ground Instruction

ALTHOUGH there must be a few clubs at which the *ab initio* pupil is taught many of the more important things appertaining to minor maintenance, the majority of them, I know, leave the pupil to use his own intelligence in the matter. The result is often that, once away from his own aerodrome or away from skilled assistance, the novice finds himself unable even to swing an airscrew or to flood a carburetter.

Naturally enough, a club's job is to turn out licensed pilots, but instructors might reasonably ask or implore their pupils to watch the ground engineers and even to assist them on occasion. In the case of a novice who intends to make at least fair-weather use of the aeroplane as a means of transport, the ability to swing an airscrew with safety, to deal with a recalcitrant engine (whether too hot or too cold for the mixture provided), to fill up with fuel and oil, and to fold or unfold the wings, is just as important as the ability to pull off a difficult forced landing or to find his way across strange country.

### Away from Help

IT was not until a friend of mine bought an aeroplane of his own that I learnt how to do these things, though, in theory, I imagined that I knew all about it. Even now, I occasionally hire and fly aeroplanes without having the least idea of the position of the oil-filler cap and of the dipstick, or even of the inner meanings attached to the fuel gauge readings—or non-readings, as the case may be.

On at least three occasions I have come across an amateur who, after visiting a small aerodrome, has been endeavouring to get away single-handed while the one and only ground engineer was out at lunch or busy with someone else's aeroplane. In a state of hot and weary panic the pilot was found wildly swinging an airscrew without making the slightest attempt to discover or to correct the real reason for the fact that his engine was a temporary non-starter.

In two cases the offenders had flooded hot engines until petrol was pouring out in a thin stream, and, in the other case, the pilot was firmly turning an ice-cold engine whilst his passenger alternately opened and shut the throttle. Perhaps it was lucky, in both these cases, that the engine had, for natural reasons, refused to start.

Needless to say, it is for very serious reasons that the majority of clubs display a notice stating that no machine must be started unless a competent person is in the pilot's seat. How often, in the bad old days, did we see pilots rushing backwards and forwards between the nose and the rear seat while the engine made four or five spasmodic beats before petering out? And how often have we heard of runaway aeroplanes? More often than we should have done.

INDICATOR.

*Private Flying*

# FROM the CLUBS

## *Events and Activity at the Clubs and Schools*

**BRISTOL**

THE Bristol and Wessex Club's Avro Cadet is being fitted for blind-flying in place of the Gipsy Moth and should be ready by now. Flying times last week totalled 25 hr. The aviation ball has been postponed from February 28 to either April 3 or April 24.

**LONDON**

Mrs. Mabel G. Caldwell and Mr. O. B. Montgomery Munro became members last week. The flying time was 88 hr. 25 min.

**HANWORTH**

Flying times for the week totalled 31 hr. 20 min. Messrs. D. R. Martin, C. E. Heath and W. P. Bowles have gone solo and Mr. G. S. Woodmark became a member. Messrs. B. Ricketts and Hoppe passed their "A" licence tests. The big event of the week has been the take-off for the Cape of F/O. David Llewellyn.

**PORTSMOUTH**

An Aeronca flew over to Portsmouth last Sunday week and was tried out by a number of members of the Portsmouth Aero Club. The flying committee has decided to hold a forced landing competition on the first Sunday in each month and it is hoped that entries from other clubs will be received. New members are Messrs. Somerset, Taylor and Burridge. Flying times for the week amounted to 35 hr. 40 min.

**LEEMING**

The Yorkshire Aviation Services' sales department has been busy. Mr. Shand has bought a B.A. Swallow, and the newly formed Harrogate Aeroplane Club have placed an order for a similar machine. Mr. Shand made his first solo last week, during which 17 hr. 35 min. flying was done. Two of the school's pupils, Mr. Robinson and Mr. Weston Adamson, are touring India in a Leopard Moth. Visitors to the aerodrome last week included Mr. Roy Fox.

**COVENTRY**

The Coventry Aero Club and Coventry Aviation Group have amalgamated with effect from February 1 and will in future be known as the Coventry Aeroplane Club. It is hoped that, with the unification of effort and assets, greater facilities will become available. The use of Whitley aerodrome, by kind permission of Sir W. G. Armstrong Whitworth Aircraft, will be retained. The joint honorary secretaries are Mr. P. Haselock (general), 25, Wainbody Avenue, Coventry, and Mr. H. T. Jackson (flying).

**WITNEY AND OXFORD**

The Witney Aerodrome Dramatic Society are giving a performance of *The Late Christopher Bean* on March 28 and will devote half the proceeds to the Sefton Brancker Memorial Fund. The play is being produced by the aerodrome's energetic manager, Mr. S. W. Saunders. Nineteen hours' flying were recorded last week, R. J. B. Pearse, H. W. Earle and H. W. Peake became members, and W. I. Dalgliesh went solo. Messrs. Pearse, Cundy and Secretan are taking the W/T course. Mr. H. C. Russell, incidentally, has joined the staff of Universal Aircraft Services as W/T instructor.

**REDHILL**

Blind-flying certificates have been issued to Messrs. H. M. B. Collins, B. Walsh and P. Eves. Two new members have joined the Club. Flying time totalled 79 hr. 25 min. last week.

**C.A.S.C.**

Twelve members attended Fen Ditton aerodrome on Sunday, flying 4 hr. 40 min. dual and 2 hr. 55 min. solo. Mr. Kearney, who took his "A" licence recently at Shoreham, has joined the Corps.

**HULL**

Twenty-five hours 50 minutes flying was recorded by the Hull Aero Club during January. Messrs. G. D. Nutt and T. F. Hayzen took their "A" licences. Dances will be held on February 15 and 22.

**MIDLAND**

Messrs. P. R. Burton and A. F. Mitton have become members in the flying and ordinary categories respectively. Flying times for the week ending February 6 amounted to 13 hr. dual and 6 hr. solo.

**WILTSHIRE**

The Wiltshire School of Flying flew 15 hr. during the week ending February 5. On Sunday, February 2, a winter record for one day was created with a return of eight hours. The Aeronca has been demonstrated and Mr. C. G. Lumsden has given a lecture on *My Experiences as an Imperial Airway's Pilot on their African Route*. Another lecture will be given on Sunday, February 23, at 5 p.m.

**BORDER**

The committee of the Border Flying Club has decided, in view of the steadily increasing membership and the number of "A" licence pilots, to purchase a third machine. There was little to report last week owing to bad weather and the absence of Flt. Lt. Potter at the Aerodrome Owner's Conference. Messrs. Routledge and Mackenzie have become members. Flying times for January, during which four "A" licences were obtained, totalled 30 hr. 35 min.

**CINQUE PORTS**

First solos have been made by Mr. A. Willys and Mr. John Deedes. A number of club members flew to Brooklands on Saturday and in the evening went to see *St. Helena* at the Old Vic. This play was written by Mr. R. C. Sherriff and Miss Jeanne de Casalis. This lady has been a member of the Club for some time and is now engaged in putting in the requisite number of hours for her "A" licence.

"Tommy" Rose dropped in on his way to the Cape, and Mr. Llewellyn's Aeronca, likewise Africa-bound, was another visitor. According to reports Mr. Llewellyn was to do the journey on a £10 note, but, inasmuch as he left his shaving apparatus and hair brushes in a member's car, his budget might have been upset. Mr. Noel Coward brought down a party on Sunday which included Mr. and Mrs. Owen Nares and their son. Mr. and Mrs. Nares used the Club's Leopard to cruise round South-East England on Sunday afternoon.

**BEAUTY TREATMENT. The new type of wing and general cleaning-up has vastly improved the appearance of the Stinson Reliant. This view is of the latest 1936 model which is briefly described on p. 184. With a cruising speed of 140 m.p.h. and four comfortable seats it is an attractive proposition. The engine is a nine-cylinder Lycoming of 225 h.p.**

## *Private Flying*

### YORKSHIRE

The aircraft of the Yorkshire Aeroplane Club flew 17 hr. 45 min. last week. Tests for "A" licences were passed by Messrs. H. Priestly (a Young Pilot's Fund pupil) and by B. A. Robinson and E. W. Hustler, both Aviation Group members.

### LEICESTERSHIRE

The former monthly record for flying time in January has been beaten with last month's total of 48 hr. 40 min. On two days the former daily record for any day in January was also beaten in spite of bad flying weather.

### CAMBRIDGE

Full advantage has been taken of the improvement in the weather and 52hr. were flown during the week ending February 8. Four new members joined the school and Mr. Saint went solo. The sixth school Gipsy Moth has been completely rebuilt and is now in service.

### HESTON

The improvement in the weather has brought Airwork school activities back to normal and the first three days of the month were very busy ones. Mr. T. C. Lewin, son of General Lewin (a well-known private aeroplane pilot on the England-East Africa route) is nearly ready for his "A" licence. He completed his preliminary training and first solo at the Ards Airport.

Since Mr. Bryans erected a building of the dimensions and general appearance of a school chapel and placed in it two good squash courts and a professional, Heston morale has triumphed over climatic conditions. Two aeroplane owners, Mr. W. D. Macpherson and Mr. P. Q. Reiss, have set a standard of play to which Heston staff aspire with a perseverance more commendable because it is unmixed with hope. Of their gallant band, Mr. Alan Muntz is the only "class" player, but Mr. Wyatt, general manager, runs him close. Mr. Brian Davy, the chief instructor, has made the greatest strides since Heston squash began, and Mr. James Shaw and pilot Israel, of Jersey Airways, are useful members of the Heston team, which (only just) lost to Hatfield last month. A return match is provisionally fixed for February 27, and Mr. Land, Heston professional, views the prospects with optimism.

### A.S.T.

In face of adverse weather, 1,401 hr. were flown during January. Of these 104 hr. 20 min. were flown in one day—a Saturday—which constituted a school record. The new civilian term commenced on January 14, and six pupils from Britain and seven from the Dominions and Colonies joined for the commercial course on that date. In addition, Lt. Ghovanlou, of Persia, joined for his "A" licence, M. de la Hubaudiere, of France, for the blind-flying course, and four British students joined for various short courses. Two Instructors' Certificates and one Blind-Flying Instructors' Certificate were awarded.

A batch of *ab initio* pupils proceeded to the Royal Air Force and were replaced by a larger batch of thirty-four, and three Imperial Airways pilots joined for the one month's flying-boat conversion course. Flt. Lts. Dickson, Bennett and Figgins and Messrs. Tomkins, Morris, Godfray, Tribe and Hamlin joined the flying instructional staff at the beginning of the month. With the recent additions to the fleet of aircraft the school have had to order a second-hand hangar and the work on its construction has started. Five Turkish Government officials paid a visit to the school early in the month.

### BROOKLANDS

Flying hours were kept low during the week ending February 2 because of the weather and the flooded aerodrome. Messrs. Bridgeman, Moseley, Bamber, Birk and Tan became members. Messrs. Lawson and Cheer passed their "A" licence tests, and instrument flying courses were taken by Messrs. Midgley and Ogilvie-Forbes. A number of members visited Heston on Saturday and were given a very able lecture and demonstration on the control of an airport by Mr. J. Jeffs. The British Aircraft Manufacturing Co. sent over a Swallow for demonstration and members seemed to be very pleased with it.

Last week's improved weather pushed up the flying hours to ninety. Messrs. Stonham and Marfatia have become members, Mr. Densham completed his "A" licence tests and Mr. Pratt has gone solo. A lady pupil who has not long qualified for her "A" licence went up solo the other day and, getting away from the aerodrome, could not recognise the countryside in the thick ground mist which had blown up. Thinking that if she continued she might run out of petrol and be forced to land somewhere which might prove difficult, she spotted a field suitable for a landing and put her machine down. The only person around when she left her machine was another of the same sex who not only directed her back to Brooklands but offered to go with her. The offer was accepted and there was great consternation among the instructors when the missing machine returned with two persons up where there had originally been only one!

A most instructive lecture on *Fuel and Detonation* was given on February 9 by Mr. F. R. Banks. The aerial treasure hunt was won by Capt. E. F. Walter with Mr. J. C. Campion in his Autogiro (from Hanworth) was second and Mr. J. S. Berget third. Next Sunday, February 16, Mr. Appleby will demonstrate his Carden-engined *Pou*. On the same date there will be a tea-dance in the clubhouse.

### CAMBRIDGE UNIVERSITY.

Cambridge University has created a precedent in being the first university to claim a civil flying club. The Cambridge University Flying Club has its headquarters at 62, St. Andrew's Street, in the centre of the town, and its chief object is the furtherance of interest in aviation among the undergraduates, both in a practical and theoretical way.

Through the help of Marshall's Flying School, all flying activities are carried out at the Cambridge aerodrome; already several members either have obtained or are about to obtain their "A" licences. Lecture courses on air navigation, construction and maintenance of aircraft and engines, and so on, as well as lectures by distinguished figures in aviation on subjects of general interest have also been arranged by the Club. Preparations are being made to hold air navigation and other flying competitions.

The Club is honoured in having as its President Captain the Rt. Hon. F. E. Guest, M.P., and as its Vice-Presidents Viscount Wakefield of Hythe, Sir John Siddeley, Commander Sir Walter Windham, Mr. W. Lindsay Everard, M.P., Mr. F. Handley Page, Mr. C. R. Fairey and Mr. T. O. M. Sopwith. It was largely through the generosity of Lord Wakefield that the Club was able to be formed on the present improved basis. Sir John Siddeley has given practical encouragement to the study of aero engines by presenting the Armstrong Siddeley Jaguar engine which Sir Alan Cobham used on his pioneer flights to Australia and Cape Town. This is now being dismantled by members.

Since the Cambridge University Air Squadron is too limited in numbers to absorb all those who are keen to fly, there would seem to be plenty of scope for a civil flying club which can give undergraduates an interest in increasing their skill after they have attained their "A" licences, as well as gaining useful theoretical and practical knowledge which is not covered by the ordinary flying school curriculum. Cambridge provides an exceptional opportunity for undergraduates to learn to fly as inexpensively as at any civil club in Great Britain before entering upon a career, while undoubtedly an increasing number will want to choose a career in aviation. The Club is, therefore, likely to become a rallying centre for all undergraduates who are seriously interested in any branch of aviation.

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## *The Weather Broadcasts*

ON and after Saturday, February 15, the present Air Ministry meteorological broadcasts—from Borough Hill, Daventry, on 254 kc/s (1,181 m.)—will be replaced by a much more comprehensive and frequent service, details of which appear in *Notice to Airmen* No. 14 of this year.

## *An August Camp at Sutton Bank*

IN *Flight* of January 2 brief details were given of the various meetings which had been arranged for this year by the Yorkshire Gliding Club at Sutton Bank. Another interesting date has now been added to those already given.

Between August 2 and 15 a fourteen-day instruction camp is being organised as a summer holiday, and B.G.A. observers will be in attendance to pass out pupils for the "A," "B" and "C" gliding certificates. Separate courses are to be arranged for those with and without previous experience as glider or power pilots.

The fee for this course is £12 12s., inclusive of instruction and flying fees, meals, complete camping accommodation and insurance against damage to machines or "third party." In addition, a seven-day course is obtainable for £7 7s. Those interested should write immediately to Mr. H. T. Blakeston, Aspen House, Driffield, Yorks.

## *This Year's Reliant*

FOR 1936 the Stinson Aircraft Corporation is marketing a very much improved version of its Reliant cabin monoplane. The Reliant, of course, is by no means unknown in this country, since the distributors here are Brian Allen Aviation, Ltd., of Croydon Airport.

The new Reliant differs very considerably from earlier types, notably in that its wings, which now taper both in plan form and thickness toward the tips and roots, have steel spars and drag tubes with duralumin ribs. Formerly, of course, the spars were of wood. Another striking exterior improvement is the single bracing strut on each side of the fuselage.

The engine fitted to the standard model is the Lycoming R-680-4- nine-cylinder radial of 225 h.p. An adjustable pitch airscrew is standard, but one model, the SR7-B, has an airscrew of the Lycoming controllable type. This machine, incidentally, has increased tankage and cruises at 141 m.p.h. on 180 h.p., whereas the model SR7-A, the somewhat cheaper type, cruises at 138.5 m.p.h. The service ceiling of the SR7-B is also somewhat better than the other model at 14,600ft. as compared with 12,800ft., and its range is 560 miles instead of 400 miles. Slotted flaps, which are vacuum operated, are incorporated in both models.

# THE ROYAL AIR FORCE

SERVICE NOTES AND NEWS — AIR MINISTRY ANNOUNCEMENTS

## No. 22 GROUP—TRANSFER TO A.D.G.B.

With effect from February 17, No. 22 Group will be transferred from Inland Area to the Air Defence of Great Britain for administration, and to the Air Ministry (D.S.D.) for training. The technical administration of the School of Photography will continue to be carried out by the Air Ministry (D. of T.).

## ROYAL CANADIAN AIR FORCE

The following appointments in the Royal Canadian Air Force are notified:—Wing Cdr. S. G. Tackaberry is transferred from R.C.A.F. headquarters, Ottawa, to courses abroad establishment, on proceeding to the R.A.F. Staff College, Andover. Sqn. Ldr. G. V. Walsh, M.B.E., is transferred from Ottawa headquarters to the R.C.A.F. Station, Trenton, to date February 14, 1936. Sqn. Ldr. L. F. Stevenson is transferred from Ottawa headquarters to No. 4 (F.B.) Squadron, R.C.A.F. Station, Vancouver, B.C., to date February 1, 1936. Sqn. Ldr. Douglas Urquhart McGregor, M.C., has been appointed to command No. 19 (Bomber) Squadron, Hamilton, Ontario, dated October 1, 1935.

## CENTRAL FLYING SCHOOL CATEGORIES

The undermentioned officers and airman pilots, who attended the Flying Instructor's Course at the Central Flying School from September 16, 1935, until December 14, 1935, have been categorised as follows:—

*A.2*

F/Os H. W. A. Chesterman, J. W. Donaldson, R. N. McKern, and F. J. Tyson; Sergts. Robinson, C. A., and Gregory, L.

*B*

Flt. Lt. R. Wardman, F/Os D. Addenbrooke, G. A. Bartlett, T. C. Chambers, K. F. Ferguson, J. L. H. Fletcher, S. F. Godden, A. D. Grace, G. T. Jarman, S. E. Mackenzie, B. S. Nicholl, J. O. W. Oliver, E. F. Porter, D. Sloan, W. W. Stainthorpe, N. H. J. Tindal, and E. W. Whitley; Sergts. Arnold, B. E., Barr, J. G., Bignall, J. S. W., Hall, A. W., Irish, E. J., Lawson, H. R., Ogle, J. N., Priest, J. G., Scott, T. M., Sherwood, H. G., and Wheeler, J. C.

*C*

F/Os W. R. Cox, D. W. Reid, and W. H. N. Turner; Sergt. Sweet, E. E.

## AIR FORCE LIST

The February issue of the *Air Force List* has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

## AIR GUNNERS (PART TIME)

The Air Council have considered the system of providing air gunners, in relation to the air observer scheme and to the requirements consequent on expansion, and have decided to modify it as follows:—

Policy will be directed to securing that, in future, air gunners are drawn principally from the personnel of flights (like air observers), a high proportion being drawn from mates and the balance from airmen in trades not eligible for employment as air observers. For the present, however, airmen of all groups will continue to be eligible for training as air gunners.

The air gunners' course of instruction will comprise gunnery subjects only, and its duration will be reduced from eight to four weeks accordingly.

## FLYING ACCIDENT

The Air Ministry regrets to announce that Sergt. James Edward Acock lost his life when an aircraft belonging to H.M.S. *Furious*, on passage from Gibraltar to Las Palmas, crashed into the sea on February 5. Sergt. Acock was the pilot and sole occupant of the aircraft.

## VACANCIES FOR APPRENTICE CLERKS

The Air Ministry announces:—

Vacancies exist in the Royal Air Force for well-educated boys (in possession of an approved first School certificate) between the age of 15½ and 17 years 3 months to enter as apprentice clerks in April and July next. Preference may be given to candidates who will have attained the age of 16 years.

Detailed information regarding the apprentice clerk scheme is contained in A.M. Pamphlet 9, which can be obtained from the Secretary, Air Ministry (Apprentice Clerks Department), Victory House, Kingsway, London, W.C.2. Successful candidates will be required to complete twelve years' regular Air Force service after reaching the age of 18. At the age of 30 they will normally return to civil life, but a limited number may be permitted to re-engage to complete twenty-four years' service, qualifying for pension. Apprentices will normally receive eighteen months' training in clerical duties, typewriting, practical office routine, shorthand (for Clerks, General Duties), pay and store accounting (for Clerks, Accounting). Their general education will also be continued under a staff of graduate teachers.

During training and while under the age of 18, an apprentice clerk at present receives pay at the rate of 1s. a day for the first year and 1s. 6d. a day afterwards. A much higher rate is issuable when he has both attained the age of 18 and successfully completed the course. In addition, free board and lodging, medical attendance and an allowance for uniform are provided.

## ROYAL AIR FORCE GAZETTE

*London Gazette, February 4, 1936*

*General Duties Branch*

F. F. Rainsford (Flying Officer, Special Reserve) is granted a short service commission as Pilot Officer on probation with effect from and with seniority of January 20.

The following are granted short service commissions as Acting Pilot Officers on probation with effect from and with seniority of January 20:—F. Aikens, A. Aitken, L. Aitken, D. J. Bassett, P. R. Beare, H. R. P. Bridgen, G. R. Buchanan, D. C. H. Copping, M. F. C. Farrar, A. S. Forbes, J. H. Grant, I. D. Grant-Crawford, D. H. Holmes, A. N. Jones, K. V. Keen, G. H. E. Kingcome, C. J. F. Kydd, R. H. Lonsdale, A. R. Putt, G. L. Raphael, F. C. Rivers, J. G. Sanders, A. L. H. Solano, C. R. D. Stewart, R. N. Stidolph, W. N. Sykes, T. E. Syms, R. B. Townshend, F. E. Williams.

The following are granted short service commissions as Acting Pilot Officers on probation with effect from January 23, and with seniority of January 20:—R. S. Allen, S. M. Bird, R. Clark, A. A. Dilnot, F. R. C. Fowle, J. R. Leatherdale, E. A. Liversidge, G. O. Mills, E. P. Mortimer, R. H. H. L. Oliphant, D. L. Rayment, D. R. Stanley-Adams, F. C. Stibbard, K. T. Thompson, R. H. Warcup, R. A. Weeks, M. C. Wells.

Sqn. Ldr. F. M. F. West, V.C., M.C., is granted acting rank of Wing Commander (unpaid) (February 5).

The following promotions are made with effect from February 1:—Flight Lieutenants to be Squadron Leaders.—F. W. Long, J. D. I. Hardman, D.F.C., G. P. H. Carter, G. L. Carter, A.F.C., E. A. Blake, M.M., S. N. Webster, A.F.C., E. D. Barnes, A.F.C., R. L. Ragg, A.F.C., N. S. Paynter, T. G. Bird, B. H. C. Russell, I. E. Brodie, G. Combe, J. W. Lissett, C. H. Flinn, C. D. Adams, D. M. Fleming, F. Kirk, E. R. C. Hobson, D.F.C., W. L. Dawson, D. F. Anderson, D.F.C., A.F.C., E. M. Drummond, J. A. Elliott, E. A. Hodgson, C. McC. Vincent, D.F.C., A.F.C., R. H. Horniman, L. B. Duggan, H. R. McL. Reid, D.F.C., G. H. Vasse, G. R. C. Spencer.

The following Flying Officers are promoted to the rank of Flight Lieutenant:—C. F. Birks (January 12); T. U. C. Shirley, C. E. J. Baines, D. B. D. Field (January 26).

The following Pilot Officers are promoted to the rank of Flying Officer (January 28):—J. R. Jeudwine, P. D. W. Hackforth, H. D. Beck, A. F. Hards.

Flt. Lt. H. A. J. de S. Barrow is transferred to the Reserve Class A (February 2).

The following Flying Officers are transferred to the Reserve Class A:—J. A. Dobson (January 25); W. G. A. Coulson (February 3).

P/O. A. B. Sowter resigns his permanent commission (January 27); Flt. Lt. F. S. Wainscot is placed on the retired list on account of ill-health (January 27).

*Stores Branch*

The following promotions are made with effect from February 1:—Flight Lieutenants to be Squadron Leaders.—S. Bingham, V. B. Randford, A. J. Cox, M.B.E., E. R. Wood.

The following Flying Officers are promoted to the rank of Flight Lieutenant (January 10):—R. G. Seymour, G. Blinman.

*Accountant Branch*

The following promotions are made with effect from February 1:—Flight Lieutenants to be Squadron Leaders.—J. M. Adams, E. V. Humphrey.

*Medical Branch*

Flt. Lt. J. Hill, M.B., Ch.B., D.P.H., is promoted to the rank of Squadron Leader (December 27, 1935); F/O. W. G. S. Roberts, M.R.C.S., L.R.C.P., is promoted to the rank of Flight Lieutenant (January 7).

*Chaplains Branch*

The Rev. W. T. Rees, L.D., B.D., is placed on the retired list at his own request (February 1).

*Commissioned Engineer Officer*

Warrant Officer H. J. Sanders is granted a permanent commission as Flying Officer on probation with effect from January 18, and with seniority of September 19, 1935.

## ROYAL AIR FORCE RESERVE

*Reserve of Air Force Officers*

*General Duties Branch*

T. Joyce-Clarke is granted a commission as Flight Lieutenant in Class C (December 19, 1935); F/O. V. B. Myers relinquishes his commission on completion of service (April 24, 1935).

## SPECIAL RESERVE

*General Duties Branch*

Pilot Officer on probation J. C. Reynolds is confirmed in rank (August 16, 1935). (Substituted for the notification in the *Gazette* of November 26, 1935.) F/O. F. F. Rainsford relinquishes his commission on appointment to a short service commission in the Royal Air Force (January 20).

## AUXILIARY AIR FORCE

*General Duties Branch*

No. 601 (COUNTY OF LONDON) (FIGHTER) SQUADRON.—Flt. Lt. B. S. Thynne is promoted to the rank of Squadron Leader and appointed to the command of the squadron (February 1).

No. 607 (COUNTY OF DURHAM) (BOMBER) SQUADRON.—P/O. G. C. White is promoted to the rank of Flying Officer (November 29, 1935).

# ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

*General Duties Branch*

*Group Captains.*—R. S. Maxwell, M.C., D.F.C., A.F.C., to R.A.F. Station, Mildenhall; to command, 23.1.36. A. H. Peck, D.S.O., M.C., to Headquarters, R.A.F., Far East, Singapore; for duty as Senior Air Staff Officer, 21.12.35.

*Wing Commanders.*—P. E. Maitland, M.V.O., A.F.C., to R.A.F. Station, Mount Batten; to command vice Group Capt. I. T. Lloyd, 20.1.36. W. R. D. Acland, D.F.C., A.F.C., to Headquarters, R.A.F., Iraq, Hinaidi; for Air Staff duties vice Wing Cdr. H. K. Thorold, D.S.C., D.F.C., A.F.C., 28.1.36. S. P. Simpson, M.C., to No. 1 School of Technical Training (Apprentices), Halton; for Administrative duties and to command No. 2 Apprentices Wing vice Group Capt. A. R. Arnold, D.S.C., D.F.C., 31.1.36.

*Squadron Leaders.*—A. C. Bayley, to R.A.F. Station, Hawkinge; to command, 27.1.36. A. C. B. Harrison, M.C., to Headquarters, Air Defence of Great Britain, Uxbridge; for Personnel Staff duties, 27.1.36. T. A. Langford-Sainsbury, D.F.C., A.F.C., to No. 48 (G.R.) Squadron, Manston; to command, 27.1.36. E. J. Kingston-McCloughry, D.S.O., D.F.C., to No. 4 (Army Co-operation) Squadron, South Farnborough; to command vice Sqn. Ldr. F. M. F. West, V.C., M.C., 16.1.36. J. H. Dand, M.B.E., to No. 23 Group Headquarters, Grantham; for Navigation duties, 3.2.36. J. I. T. Jones, D.S.O., M.C., D.F.C., M.M., to R.A.F. Depot, Uxbridge; for Administrative duties vice Sqn Ldr. G. G. Walker, M.C., 1.2.36. G. G. Walker, M.C., to No. 10 Flying Training School, Ternhill; for Administrative duties, 29.1.36. C. Findlay, D.F.C., to No. 70 (B.T.) Squadron, Hinaidi, Iraq; for Flying duties vice Sqn. Ldr. J. H. Dand, M.B.E., 28.1.36. K. A. Meek, M.B.E., to Aircraft Depot, Hinaidi, Iraq; for Engineer duties, 28.1.36. F. C. B. Savile, to No. 203 (F.B.) Squadron, Basrah, Iraq; for Administrative duties, 30.1.36.

*Flight Lieutenants.*—L. M. Hooper, to No. 7 Flying Training School, Peterborough, 27.1.36. G. R. Oliver, to R.A.F. Depot, Uxbridge, 27.1.36. A. D. Davies, to Headquarters, R.A.F., Iraq, Hinaidi, 28.1.36. H. E. Dicken, to No. 30 (B) Squadron, Mosul, Iraq, 28.1.36. C. R. Hancock, D.F.C., to Headquarters, R.A.F., Iraq, Hinaidi, 28.1.36. G. W. Hayes, to No. 55 (B) Squadron, Hinaidi, Iraq, 28.1.36. B. D. Nicholas, to No. 30 (B) Squadron, Mosul, Iraq, 28.1.36. E. D. Barnes, A.F.C., to No. 1 (Indian) Group Headquarters, Peshawar, 28.1.36. R. H. Carter, to No. 1 (Indian Wing) Station, Kohat, 28.1.36. D. M. T. Macdonald, to No. 3 (Indian Wing) Station, Karachi, 28.1.36. E. L. S. Ward, to Headquarters, R.A.F., India, New Delhi, 28.1.36. M. J. Adam, to Experimental Establishment, Royal Aircraft Establishment, South Farnborough, 3.2.36. S. H. C. Gray, to No. 10 Flying Training School, Ternhill, 1.2.36. I. Hodgson, to R.A.F. Record Office, Ruislip, 3.2.36. O. B. Swain, to Air Armament School, Eastchurch, 3.2.36.

*Flying Officers.*—W. J. F. Bull, to No. 8 Flying Training School, Montrose, 27.1.36. G. W. Colledge, to Electrical and Wireless School, Cranwell, 27.1.36. L. C. Slee, to No. 10 Flying Training School, Ternhill, 27.1.36. G. W. P. Grant, to No. 100 (T.B.) Squadron, Singapore, 18.1.36. C. H. Baker, to Aircraft Depot, Hinaidi, Iraq, 28.1.36. W. J. Small, to Aircraft Depot, Hinaidi, Iraq, 28.1.36. J. J. Zwarenstein, to No. 203 (F.B.) Squadron, Basrah, Iraq, 30.1.36. H. J. F. Le Good, to No. 8 Flying Training School, Montrose, 3.2.36. M. F. B. Read, to No. 10 Flying Training School, Ternhill, 3.2.36.

*Pilot Officers.*—D. J. North-Bamford, to Electrical and Wireless School, Cranwell, 27.1.36. R. C. Meares, to No. 100 (T.B.) Squadron, Singapore, 17.1.36. W. W. Loxton, to No. 822 (F.S.R.) Squadron, 22.1.36. F. F. Rainsford, to No. 215 (B.) Squadron, Upper Heyford; on appointment to a short service commission as Pilot Officer, on probation, 20.1.36. A. A. de Gruyther, to No. 203 (F.B.) Squadron, Basrah, Iraq, 28.1.36. T. B. de la P. Beresford, F. A. Holmes, D. C. Smith, L. J. Stickley, W. E. Surplice, to No. 5 (A.C.) Squadron, Chaklala, India, 28.1.36. T. G. Tideman, to No. 28 (A.C.) Squadron, Ambala, India, 28.1.36. C. D. Hackett, P. T. Philpott, T. M. Tinker, W. G. Wells, to No. 31 (A.C.) Squadron, Karachi, India, 28.1.36.

*Acting Pilot Officers.*—P. F. Edinger, to No. 2 (Army Co-operation) Squadron, Hawkinge, 22.1.36. D. I. C. Eyres, to No. 4 (Army Co-operation) Squadron, South Farnborough, 23.1.36. A. de V. Leach and J. R. Wilson, to No. 13 (Army Co-operation) Squadron, Old Sarum, 22.1.36. R. L. Smith, to No. 19 (F) Squadron, Duxford, 22.1.36. M. Nolan, to No. 38 (B) Squadron, Mildenhall, 24.1.36. D. K. Banks, S. Dodds, P. D. R. Hutchings, J. Riley, and M. M. J. Stevens, to No. 48 (G.R.) Squadron, Manston, 27.1.36. W. R. Selkirk, to No. 54 (F) Squadron, Hornchurch, 24.1.36. A. B. Olney, to No. 57 (B) Squadron, Upper Heyford, 23.1.36. S. Hook, to No. 101 (B) Squadron, Bicester, 24.1.36.

*Stores Branch*

*Wing Commander.*—B. W. M. Williams, to Headquarters, R.A.F., Cranwell; for duty as Senior Equipment Staff Officer vice Wing Cdr. N. R. Fuller, 28.1.36.

*Squadron Leaders.*—C. T. Davis, to Headquarters, R.A.F., Halton; for Equipment (Stores) Staff duties vice Sqn. Ldr. W. G. M. Nicholl, 27.1.36. M. J. James, M.B.E., to D. of E., Dept. of A.M.S.O., Air Ministry, vice Sqr. Ldr. E. H. Eldridge, 28.1.36. A. P. Woollett, to Headquarters, Fighting Area, Uxbridge; for Equipment (Stores) Staff duties, 27.1.36. E. H. Eldridge, to Supplies and Transport Service, Iraq, for supplies duties, 28.1.36. A. G. Knight, M.B.E., to D. of E., Dept. of A.M.S.O., Air Ministry, 3.2.36. W. G. MacD. Nicholl, to School of Store Accounting and Storekeeping, Cranwell; for Stores duties vice Sqn. Ldr. P. F. Connaughton, 3.2.36.

*Flight Lieutenants.*—W. A. D. Collingwood, to Headquarters, R.A.F., Iraq, Hinaidi, 28.1.36. H. A. Wrigley, to Supplies and Transport Services, Iraq, 28.1.36.

*Accountant Branch*

*Flight Lieutenants.*—G. Goodall, to Headquarters, R.A.F., Iraq, Hinaidi, 28.1.36. F. M. Hall, to Aircraft Depot, Hinaidi, Iraq, 13.1.36.

*Flying Officers.*—J. S. B. Anderson and R. F. L. Hart, to Aircraft Depot, Hinaidi, Iraq, 28.1.36.

*Medical Branch*

*Wing Commander.*—J. Kyle, to Medical Training Depot, Halton; for duty as Commanding Officer vice Group Capt. E. W. Craig, M.C., 30.1.36.

*Flight Lieutenant.*—C. A. Lewis, to R.A.F. General Hospital, Hinaidi, Iraq, 15.1.36. J. Hutchieson, to R.A.F. General Hospital, Hinaidi, Iraq, 28.1.36.

*Flying Officers.*—R. A. Cumming and L. E. A. Dearberg, to R.A.F. General Hospital, Hinaidi, Iraq, 28.1.36. S. R. C. Nelson, to Central Medical Establishment, London, 3.2.36. H. L. Willcox, to R.A.F. General Hospital, Hinaidi, Iraq, 15.1.36.

*Commissioned Engineer Officers*

*Flying Officers.*—H. J. Sanders, to Aeroplane and Armament Experimental Establishment, Martlesham Heath; on appointment to a permanent commission as Flying Officer—Commissioned Engineer Officer—on probation, 18.1.36. F. G. Hammond, to Aircraft Depot, Hinaidi, Iraq, 28.1.36.

# HERE and THERE

## *"Humane Methods" in War : Fuel Refunds for Tourists : A "Pou" Departure : Alvis and Gnome Rhone*

### Unrestricted Warfare

THE possibility of restricting methods of warfare was discussed in a paper read before the Royal United Service Institution on Wednesday of last week by Major General H. Thuillier, K.C.B., C.M.G., Col. Commandant, Royal Engineers. The chair was taken by Admiral Sir William Goodenough, G.C.B., M.V.O. The lecturer divided the proposals which have been made into those made on economic grounds, such as limitation of tonnage of battleships, and those made on humane grounds. In the latter category he mentioned the abolition of submarines, prohibition of bombing from the air, prohibition of heavy artillery, heavy tanks, gas and chemical substances.

He then proceeded to ask whether such prohibitions would really reduce the inhumanity of war. He argued effectively that submarines were not more inhumane than other warships except when used against merchant and passenger ships. He was much less convincing when he said that dropping bombs on civilian populations was not more inhumane than sending youths out to be killed in battle. He easily demolished the case for abolishing heavy tanks; and then proceeded to make the startling (though not entirely novel) assertion that gas was not more but less inhumane than artillery and rifle fire.

He ended by discussing the possibility of an international force of all Services, or of aircraft only, which, he said, would entail the surrender of their sovereign rights by nations to the League of Nations. He held that countries would be most unwilling to surrender their rights to maintain armed forces.

Subsequent speakers in the debate mostly expressed the view that it was now impossible and undesirable to restrict warfare, though one at least held that an enemy who had surrendered should be well treated.

### "Duty Drawback"

THE tax refund on petrol supplied to an aeroplane for a journey out of one country into another is known as "duty drawback," and the practice of various European countries in its application is almost as puzzling as its title—and certainly anything but rational. Some countries refund these taxes without question, some do not, and others do so in certain circumstances, e.g., when the aircraft is operated by a recognised transport company.

The whole business is very lucidly explained, and the various countries and their methods set out alphabetically, in a booklet entitled "Duty Drawback," obtainable on application from the Aviation Department of the Anglo-American Oil Co., Ltd., 36, Queen Anne's Gate, Westminster, London, S.W.1. The booklet also explains how Stanavo representatives in various countries can facilitate the formalities involved.

### An Eve-sham-Pou?

AN Evesham *Pou* enthusiast, Mr. Horace C. Wright, appears to be breaking away from M. Mignet's precepts in a distinctly original fashion—so much so that an interview with him in the *Evesham Journal and Four Shires Advertiser* deserves extensive and unedited quotation:—

"My structure is what is known as mixed construction, a system which requires that each component part is constructed with a proportion of light metal framing and bracing which enables the assembled mass to be tensioned, like a cycle wheel; each part falling into line; therefore, nothing short of a fracture or complete disintegration can ruin it. That's 'mixed,' but it's plain sense and good practice. To do this I had to design the whole box of tricks and bid Mignet and his book of words *au revoir* last September.

"Then, as to the fabric surfacing or skin. How anyone could manipulate forty yards of dry nainsook into covering for a twenty foot wing in a damp backyard is a problem that I avoided. Then it requires doping, which is painting with high chemical liquid to tighten the surface like a drum and this in a fairly high, certainly dry, temperature. I wanted to prevent Mignet disappointing thousands of potential aviators who have no place in which to tackle the job, if they cannot do it in a backyard. so I invented another method, which can be done in a backyard. Scientifically, it is known as synthetical process and my particular application of synthesis is described as a 'skin and connective tissue of laminated and stressed woodpaper.'

"That is all that can be said about it at the moment, except that it is done with special sheets of paper, stuck together with a simple cement in a particular way at a certain time. And why not paper? Paper being made from wood is still wood after all. I have built it up to the shape required for my aeroplane surfaces, and, moreover, many things which last quite a long time, Evesham Town Hall clock tower, for example, are made of wood. For the present, the precise formula remains under my hat . . ."

Being charitable enough to believe that Mr. Wright has been somewhat misreported, we will refrain from making the comment which the closing sentence invites.

**SPIN-STOPPING BY PARACHUTE: Mr. F. G. Miles has evolved a scheme, not yet tested in actual flight, for stopping a flat spin during the flight-testing of new aircraft by releasing a small parachute anchored to the tail of the machine. In this picture the parachute is being fitted on a Nighthawk.** (*Flight* photograph.)

### Alvis and Gnome Rhone

THE new Alvis aero engine factory at Coventry is now nearing completion. The products of this factory will (as forecast in *Flight* last September) be the outcome of an arrangement between the Alvis Company and Gnome Rhone —believed to be the biggest manufacturers of aero engines in the world and to have supplied 80 per cent. of the modern power units of the French air force and commercial air lines. Gnome Rhone are now concentrating on engines of very high power, such as the Mistral Majors of 900 h.p.—or even 1,500 h.p. in a new type now in preparation.

By this arrangement, it is stated, the Alvis Company will have the benefit of the whole of the French concern's experience and future experimental knowledge, and the engines they will make and sell will be based upon this knowledge, modified in accordance with British experience, materials and methods of inspection, which, needless to say, carry very considerable prestige in the aero engine markets of the world.

It is emphasised that there is not to be the slightest financial connection between the French and British concerns, nor is there any question of control.

### Model Aeronautical Fixtures

IN the fixture list of model aeronautical events, published on page 164 of last week's issue, those marked with an asterisk should have denoted competitions flown on a central ground and not, as inadvertently stated, those held on clubs' own grounds.

# THE INDUSTRY

## A Northern Agency

RYDERS' MOTORS, of Liverpool, have been appointed concessionaires in the Northern Counties for Abbott-Baynes Aircraft, the manufacturers of the Carden-engined *Pou*, of the Abbotts-Baynes "powered sailplane," and, of course, of normal sailplanes.

## Oil Achievements

AN extremely well-illustrated booklet, covering flying, motoring, motor cycling, and even record-breaking railway locomotives, has been issued by C. C. Wakefield and Co., Ltd., Wakefield House, Cheapside, London, E.C.2; it is devoted to the many Castrol achievements of 1935.

## Steel Constructional Fittings

CONSTRUCTIONAL and furnishing steelwork in a very wide variety is the speciality of Constructors, Ltd., of Tyburn Road, Erdington, Birmingham, who have recently issued a leaflet forming an index to their fourteen catalogues; these catalogues cover such classes of steelwork as factory cycle sheds, stores and office shelving and cabinets, ornamental grids and pressed-steel sections of any special design required.

## Resisting Corrosion

A FEATURE of the Cellon display at the British Industries Fair at Birmingham—which opens next Monday—will be the new protective coating of alloy surfaces, invented by two R.A.E. officials, Messrs. H. Sutton and Mr. L. F. Le Brocq, who, it is reported, were given Air Ministry permission to patent the product; Cellon, Ltd., have acquired the commercial rights.

## Mr. L. A. Sweny

IT is announced that Mr. L. A. Sweny has resigned his appointment as Officer in Charge of the Signals Department (Civil Aviation), Air Ministry, to become Technical Representative of the Aircraft Department of Marconi's Wireless Telegraph Co., Ltd.

After serving with the Royal Naval Air Service and the Royal Air Force during the War, Mr. Sweny joined Aircraft Travel and Transport, Ltd., and later served at Croydon under the Air Ministry.

In 1929 he went to the Air Ministry, and five years' work on aeronautical radio culminated in the establishment, last June, of the Signals Department at Croydon Airport, which Mr. Sweny organised and controlled.

## The British Sikorskys

SUBSCRIPTIONS were invited at par for 780,000 ordinary shares of 10s. each in British Marine Aircraft, Ltd., yesterday. The new company has an authorised capital of £500,000 in 1,000,000 ordinary shares, of which 120,000 shares are held by the vendor company. The company is acquiring from British Aircraft (Sales), Ltd., an exclusive licence to manufacture and sell in Great Britain, and a non-exclusive licence to manufacture and sell in the British Empire (other than Canada) the Sikorsky S.42 flying boat.

A contract has been entered into with British Aircraft (Sales), Ltd. for the sale to Marine Airways, Ltd., of flying boats of an aggregate price of £225,000. The directors of British Marine Aircraft, Ltd., are: Air Marshal Sir John F. Higgins (chairman), Admiral H. W. Grant, Lord Willoughby de Broke, Mr. W. Craven-Ellis, M.P., Brig.-Gen. Guy Lubbock, Mr. Charles Best and Mr. G. H. Handasyde. The registrars are the Aircraft Industries Corporation, Ltd., of King William Street House, London, E.C.4.

## Plastics Firm Moves

EXPANSION of business has necessitated a move into larger premises by Plastilume Products, Ltd., and they are now installed in their new offices and factory—Plastilume Works, Humes Avenue, Boston Road, Hanwell, London, W.7.

## Rolls Employees Entertained

THE entire accommodation of the Theatre Royal at Nottingham, amounting to 1,750 seats, was occupied by Rolls-Royce employees and their families last Friday for one performance of "Cinderella."

## Interest Abroad

IN a letter to the Editor, E. Gray and Son, Ltd., makers of the "Grayspec" model aero engine described in *Flight* of December 12, state that following the appearance of this description they received enquiries from several parts of the world, including one from a model aeroplane enthusiast in Russia.

## NEW COMPANIES

*In the notes below, for reasons of space, the "objects" of new companies are usually somewhat abbreviated.*

V.P. AIRSCREWS, LTD. Private company, registered January 29. Capital £10,000 in £1 shares. Objects: to adopt an agreement with Aircraft Components, Ltd., and to carry on the business of manufacturers and repairers of and dealers in aeroplanes and all motors, machinery, component parts, etc. Directors: Wm. C. Hayward, James H. E. Lane, John D. Blyth, Alfred W. Martyn (director of Aircraft Components, Ltd.). Registered office: Crescent Place, Cheltenham.

AIRCRAFT EQUIPMENT, LTD. Private company, registered January 27. Capital, £2,000 in £1 shares. Objects: to acquire and exploit all inventions for the modification or improvement of aircraft and parts thereof; to carry on the business of aeronautical engineers, manufacturers of and dealers in all kinds of equipment and accessories for aircraft, etc., and to adopt an agreement with J. E. L. Drabble. Directors: John E. Drabble, Charles R. St. J. Rich (director of Rich and Cowan, Ltd.), Wm. K. F. Morrice (director of Century Soaps, Ltd.). Registered office: 25, Soho Square, London, W.1.

AVERY EQUIPMENT, LTD. Private company, registered January 24. Capital £12,500 in £1 shares. Objects: to carry on the business of manufacturers of and dealers in wheels, brakes, and all component parts and equipment of aircraft of all kinds. First directors not named. Registered office: 104, The Green, Twickenham, Middlesex.

BRITISH LANDING GEARS, LTD. Registered as a "private" company on January 25 with a nominal capital of £3,000 in £1 shares. Objects: to acquire patents for any invention relating to aircraft, including in particular landing gear, power units and other components, and to adopt an agreement with E. J. P. Euster and L. E. Cowey. First directors to be appointed by the subscribers. Solicitors: Linklaters and Paines, 2, Bond Court, Walbrook, London, E.C.4.

H. D. R. AIRWAYS, LTD. Private company. Registered January 29. Capital £100 in £1 shares. Objects: To establish and operate air lines in any part of the world. First directors to be appointed by the subscribers. Solicitor: Horace Davey, 47 Parliament Street, London, S.W.1.

## AERONAUTICAL PATENT SPECIFICATIONS

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

*Published February 6, 1936.*

20450. BISHOP, W. H.: Aircraft (441,074).
20578. VICKERS (AVIATION), LTD., and WALLIS, B. N.: Windscreen for aircraft (441,084).
22165. MEON, H. C.: Variable-pitch propellers (441,026).
33126. SHORT BROS. (ROCHESTER AND BEDFORD), LTD., and GOUGE, A.: Control surfaces for aircraft (441,102).
35437. SPERRY GYROSCOPE CO., INC.: Gyro-magnetic compasses (440,980).
37059. BLACKBURN AEROPLANE AND MOTOR CO., LTD., and BUMPUS, F. A.: Slot for aircraft (441,103).
19318. ALLGEMEINE ELEKTRICITÄTS GES.: Variable-pitch screw propellers (441,050).

*Published February 13, 1936.*

20263. PIAGGIO & CO., SOC. ANON.: Propellers with blades the pitch of which is adjustable during flight (441,203).
20950. FORMIGONI, A.: Aircraft engines (441,148).
1517. BIRKIGT, M.: Firearm mounting, particularly for aircraft (441,349).
1518. BIRKIGT, M.: Gun mountings for aircraft (441,350).
1906. WEIR, LTD., G. AND J., and PULLIN, C. G.: Undercarriages for aircraft (441,432).
19312. MANGOLD, S.: Aircraft (441,445).

## *Forthcoming Events*

**Feb. 13.** Civil Aviation Service Corps, No. 1 (London) Sqn. Dance. 8 p.m.

**Feb. 13.** R.Ae.S. Students' Section Lecture: "Light Aeroplane Design and Construction," by Dr. N. A. de Bruyne. 7 p.m. R.Ae.S. Library, 7, Albemarle Street, London, W.1.

**Feb. 17.** R.Ae.S. Lecture: "The Boundary Layer," by Prof. L. Bairstow, Institution of Electrical Engineers, 6.30 p.m.

**Feb. 20.** R.Ae.S. (Coventry Section) Lecture: "Variable-pitch Airscrews," by Mr. T. E. Beacham, 8 p.m., Armstrong Siddeley Canteen.

**Feb. 21.** Croydon Airport Staff Dinner and Ball, Greyhound Theatre, Croydon, 7.45 p.m.

**Feb. 21.** D. H. Aeronautical Technical School: Annual Dance, Hyde Park Hotel, London, 9 p.m.

**Feb. 25.** R.Ae.S. Students' Section Lecture: "Mechanical Testing of Structures and Components," by W. Tye, 7 p.m., R.Ae.S. Library, 7, Albemarle Street, London, W.1.

**Feb. 28.** Bristol and Wessex Aeroplane Club: Annual Ball.

**Mar. 6.** Leicestershire Aero Club: Dinner and Ball, Grand Hotel, Leicester.

**Mar. 10.** Royal United Service Institution Lecture: "The Development of Civil Aviation," by Lt. Col. F. C. Shelmerdine, at 3 p.m.

**Mar. 19.** R.Ae.S. (Coventry Section) Lecture: "Type-Testing an Aircraft" by Flt. Lt. Bulman, 8 p.m., Armstrong Siddeley Canteen.

**Mar. 20-22.** Re-union of Halton Belgium Tour parties, High Leigh, Hoddesdon, Herts.

**Mar. 23.** R.Ae.S. Lecture: "Welding," by R. H. Dobson, Institution of Electrical Engineers, 6.30 p.m.

**Mar. 26-29.** Yorkshire Gliding Club: Members' Meeting.